MHI
Copy 3

Maj Mills

FM 21-11

WAR DEPARTMENT

BASIC FIELD MANUAL

FIRST AID FOR SOLDIERS

April 7, 1943

FM 21-11

BASIC FIELD MANUAL

FIRST AID FOR SOLDIERS

Prepared under direction of the
Commanding General,
Army Service Forces

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1943

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington, D. C.

WAR DEPARTMENT,
WASHINGTON, April 7, 1943.

FM 21–11, Basic Field Manual, First Aid for Soldiers, is published for the information and guidance of all concerned.

[A. G. 062.11 (9–15–42).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

DISTRIBUTION:

X.

(For explanation of symbol see FM 21–6.)

TABLE OF CONTENTS

		Paragraphs	Page
SECTION I.	General	1–5	1
II.	Wounds	6–13	2
III.	Fractures, dislocations, and sprains	14–28	13
IV.	Common emergencies and health measures	29–48	30
V.	Effects of severe heat, and measures for use in the desert	49–52	50
VI.	Effects of severe cold, and measures for use in the Arctic	53–58	53
VII.	Measures for use in the jungle and Tropics	59–62	60
VIII.	Measures for use in aircraft and tank injuries	63–64	61
IX.	Transportation of sick and injured	65–67	65
X.	War gases	68–69	85
XI.	Description of first-aid kits and packets	70–80	87
XII.	Uses of contents of first-aid kits and packets	81–127	104
INDEX			113

BASIC FIELD MANUAL

FIRST AID FOR SOLDIERS

(The matter contained herein supersedes chapter 10, FM 21–10; and section II, chapter 14, FM 21–100.)

SECTION I

GENERAL

■ 1. PURPOSE OF MANUAL.—The purpose of this manual is to teach the soldier what he can do for himself or a fellow soldier if injury or sickness occurs when no medical officer or Medical Department soldier is nearby. Information is also given concerning the use of certain supplies which are for the purpose of helping to keep well. If a soldier does the right thing, he may save his own or someone else's life, or at least relieve suffering. If he does the wrong thing, he may do more harm than if he does nothing.

■ 2. DEFINITION.—First aid means those medical measures which a soldier can carry out for himself or a companion and does not apply to the emergency medical treatment which is given by a medical officer or a Medical Department soldier.

■ 3. SOLDIER'S EQUIPMENT FOR FIRST AID.—Every soldier is issued certain equipment for giving first aid. Besides the supplies which he carries, other equipment will be found in the first-aid kits and packets in motor vehicles, airplanes, or among special troops. Soldiers whose assignments may require them to know how to use special first-aid equipment can find descriptions, illustrations, and directions for use of these supplies in sections XI and XII. In addition to the first-aid supplies mentioned, many objects which are a regular part of every soldier's clothing and general equipment or which will be found almost anywhere can be used in giving certain types of first aid.

■ 4. IMPORTANT FIRST-AID RULES.

a. Do not get excited; act quickly but calmly.

b. Do not try to do too much.

c. Handle an injured person gently.

d. Keep an injured person warm.

e. Whenever possible, give an injured person first aid before he is moved.

f. Do not pour liquids into the mouth of an unconscious person; to do this may choke him.

g. Do not try to bring an unconscious injured person to consciousness. Let him lie quietly, face down, with his head turned to one side.

h. Remember that drugs are dangerous if too much is given; follow directions when using drugs in first-aid kits and packets.

i. Anyone who has been given first aid for a serious condition should be seen as soon as possible by a medical officer.

■ 5. FIRST AID IN COMBAT.—Successful accomplishment of the assigned mission is the aim of battle. The combat soldier will administer first aid *only* when he can do so without interfering with his combat duties. When administration of first aid in actual combat is possible, usually only those measures will be taken which are immediately necessary to save life. The wounded person should be placed where he is protected from enemy fire and the elements, marking the spot where he lies so that he can be easily found by Medical Department personnel.

SECTION II

WOUNDS

■ 6. GENERAL.—Wounds are the most common conditions which require first aid. Prompt and correct first aid for wounds will not only speed their healing, but will often save a life. First aid for wounds includes measures to stop bleeding, overcome shock, relieve pain, and prevent infection.

■ 7. EXPOSURE OF WOUND.—To give proper first aid, the entire wound must be well exposed in order to ascertain exactly where it is, how large it is, and how much it is bleeding. When a wound has been caused by a bullet, a shell fragment, or other object which could have gone all the way through a part of the body, look for a wound where the object may have come out, because the wound where

it comes out is usually larger than the wound where it goes in. In order to see all wounds which may be present, cut, tear, or remove the clothing as much as necessary. Do not drag clothes over a wound; carefully lift them off.

■ 8. BLEEDING.—All open wounds bleed more or less. Bleeding from an artery is known as arterial bleeding, and bleeding from a vein is known as venous bleeding. Bleeding from the arteries is more dangerous because the blood flows fast and will soon cause a person to bleed to death unless the flow of blood is stopped. In most severe wounds there is bleeding from both arteries and veins. Bleeding of any type must be stopped as soon as possible. The first-aid methods to stop bleeding are to press directly over the wound, to elevate the wounded part, or to use a tourniquet.

a. Direct pressure over wound.—Direct pressure over the wound should always be tried first. To do this, put a sterile dressing, such as the one in your individual first-aid packet,

FIGURE 1.—Direct pressure over a wound to stop bleeding.

over the wound and press firmly on the dressing as shown in figure 1. Keep up the pressure for at least 5 minutes and then hold the dressing in place by bandaging. (See par. 11*d*.) More than one dressing may be needed for large wounds.

b. Elevating wounded part.—Raising a wounded arm or leg high above the body, as shown in figure 2, will help to stop

FIGURE 2.—Elevation of an arm to help stop bleeding.

bleeding. The wounded person must lie down and the arm or leg must be held up as high as possible while direct pressure is made on the wound and a sterile dressing is put on.

c. Use of tourniquet.—(1) *Do not use a tourniquet unless bleeding cannot be stopped by other means.* Bleeding from a wound can usually be stopped by applying a sterile dressing, pressing directly over the wound, and, if possible, raising the wounded part. If a regular issue tourniquet is used, the buckle should be on the inside of the upper arm or thigh as shown in figures 3 and 4, and the strap should be pulled

in a downward direction while the injured part is steadied. If bleeding cannot be stopped by simply pulling the tourniquet tight, loosen it enough to slip a bayonet or other object under it so that it can be made tight enough by twisting.

(2) For bleeding from the arm and hand, put on the tourniquet about a *hand's breadth below the armpit* as shown in Figure 3. For the thigh and leg, put it on about a *hand's breadth below the crotch* as shown in figure 4.

FIGURE 3.—Application of tourniquet to arm.

(3) If a regular tourniquet is not available, a triangular bandage, a tie, a belt, or a handkerchief will do instead. Figure 5 shows how a tourniquet is tightened by twisting it with a bayonet or a stick.

(4) Tighten a tourniquet only as much as is necessary to stop bleeding.

(5) A properly applied tourniquet stops all the blood going to the injured part, and gangrene may develop if a tourniquet is left on too long. *It should be loosened every 20 or 30 minutes, and then tightened again after 10 or 15 seconds.*

(6) Do not cover a tourniquet with a bandage or a splint because, if covered, it may be forgotten and left on too long.

FIGURE 4.—Application of tourniquet to leg.

FIGURE 5.—An improvised tourniquet.

If you put a tourniquet on a wounded person who is conscious and then leave him, tell him to be sure to get someone to loosen it for at least 10 or 15 seconds every 20 or 30 minutes.

■ 9. SHOCK.—*a.* Shock is a condition of weakness which usually follows wounds, burns, or other injuries. When severe shock has developed, the injured person is pale, and his skin is cold and wet with sweat. Remember, however, that these are signs of severe and fully developed shock. A person who is suffering from a mild degree of shock may not show these signs. First-aid measures for shock should, whenever possible, be started before the injured person has developed definite signs of shock. Shock is especially likely to occur if a person is bleeding. Shock can also be caused or increased by exposure to cold, fatigue, or hunger. A certain amount of shock follows all injuries and burns; it may be slight and last only for a few minutes, or it may be severe and last for a long time, and may even cause death. As a rule, the more severe an injury or burn, the greater will be the amount of shock. Shock often does not appear until many minutes or even several hours after a wound, burn, or other injury. Even before shock can be noticed, take measures to prevent it.

b. Handle the injured person gently, avoid unnecessary moving of the injured part or of the injured person, and in all other ways make him as comfortable as possible.

c. To prevent or overcome shock, put the injured person on his back with his head and shoulders lower than his legs and hips. If he is unconscious, keep him *face down*, with his *head turned to one side*, and with his head and shoulders lower than his legs and hips.

d. Stop any bleeding as soon as possible.

e. Remove the individual's pack and loosen tight clothing or straps.

f. Keep an injured person warm, but be sure not to overheat him because overheating can increase shock instead of preventing or overcoming it. Ordinarily, simply cover him with extra clothing or blankets. If the weather is cold, apply heat by means of bottles or canteens filled with hot water, or by means of warm stones or bricks. These warm objects can be placed between the legs, under the armpits, and beside the waist; *they should be covered or placed between blankets and*

should not be put against bare skin or against very thin clothing because they may burn the person.

g. Warm drinks are helpful in shock. If a person has a wound of the abdomen or throat, never give him more than a few small sips of water to wet his lips. Unless very thirsty, a person with a wound of the abdomen or throat should be given nothing to drink, and should never be given anything to eat.

■ 10. PAIN.—Some pain occurs sooner or later following all wounds. Pain is often so slight that it does not bother the injured person enough to require any particular attention but, if pain is severe, it must be relieved as much as possible. Pain can often be prevented or relieved by simple measures such as keeping an injured person quiet and warm, carefully changing his position to make him comfortable, splinting an injured arm or leg, and gentle handling during transportation. Only when pain is severe, or when a badly injured person must be moved quickly, as from a wrecked vehicle or aircraft, is it wise to give him morphine. If pain is severe, however, a dose of morphine will not only relieve the pain but will also lessen shock. If morphine is needed to relieve pain, it will be found in certain first-aid kits and packets, already prepared for injection, in a collapsible tube with an attached needle. Directions for its use are given in paragraph 110 and are shown in figures 96 and 97.

Caution: The full effects of morphine are not felt for 20 to 30 minutes after injection. A second injection of morphine for continued severe pain should not be given sooner than 2 hours after the first one. Never give a second dose of morphine to a person who is breathing 12 or less times a minute. Never give morphine to an unconscious person.

■ 11. INFECTION.—*a.* Whenever the skin is torn or cut, infection may occur. Infection is very likely to take place if a wound touches the ground, or if anything else dirty touches or gets into it. A wound which becomes infected is much more serious than one which is kept clean, so the prevention of infection is a very important first-aid measure. At the same time that bleeding is being stopped and a dressing applied, as well as after these first-aid measures have been

carried out, care must be taken to keep a wound clean, so as to prevent infection.

b. Do not touch a wound with dirty hands or dirty clothing. Do not allow a wound to touch the ground. Do not wash a wound.

FIGURE 6.—First-aid packet being opened by pulling on metal tape which seals the container.

c. If there is only a small amount of bleeding from a wound when first seen, or if bleeding has been easily stopped, sprinkle sulfanilamide, which is in the first-aid packet (figs. 6 and 7), into the wound as shown in figure 8, and then apply the sterile dressing, which is also in the first-aid packet. When bleeding has been hard to stop, do not lift up or take off the dressing to sprinkle sulfanilamide into the wound; removing the dressing may start bleeding again.

d. The proper application of a sterile dressing is an important means of preventing infection as well as of stopping bleeding. To use the dressing in the first-aid packet, carefully remove the wrapper as shown in figure 9. Open the

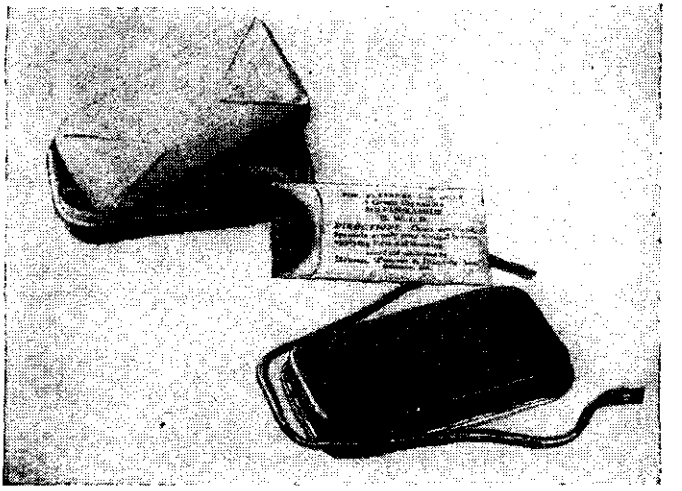

FIGURE 7.—Contents of first-aid packet.

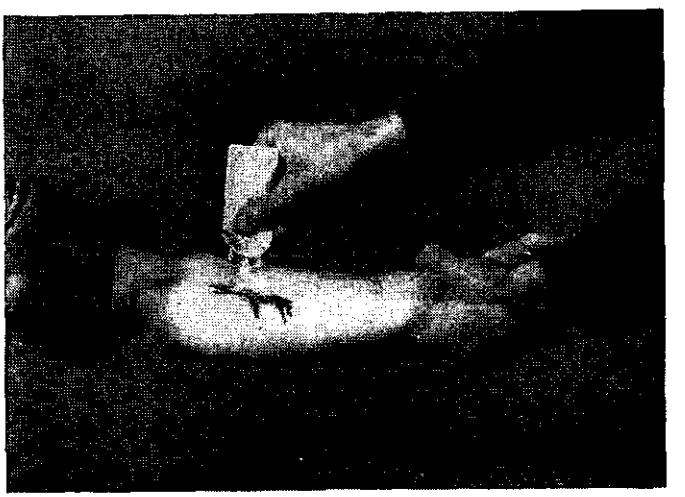

FIGURE 8.—Sprinkling sulfanilamide into a wound.

FIGURE 9.—Removal of wrapper from dressing.

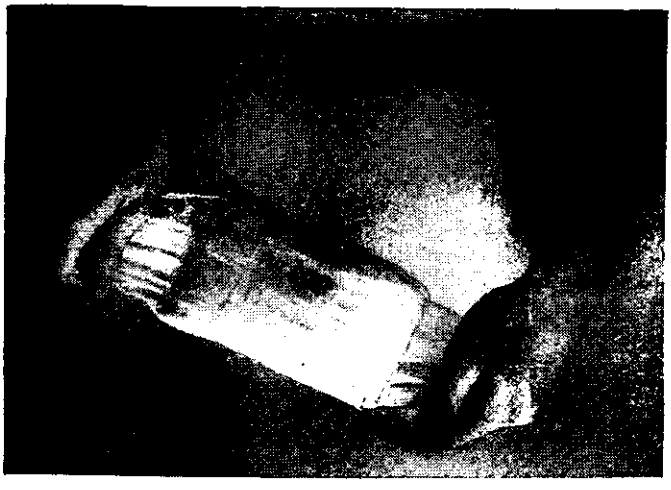

FIGURE 10.—Method of opening compress.

compress by pulling on the two folded bandages attached to the compress, as shown in figure 10, being careful not to touch the inside of the compress with the fingers or anything else. Still holding one folded bandage in each hand, apply the compress to the wound as shown in figure 11; then wrap the bandage around the injured part of the body and tie the ends together or fasten them with safety pins.

FIGURE 11.—Application of dressing to wound.

e. When wounded other than in the abdomen or throat, take by mouth, along with a large amount of water, the eight sulfadiazine tablets (or the twelve sulfanilamide tablets found in some packets instead of sulfadiazine tablets) which are in the sealed packet carried in the first-aid pouch attached to the cartridge belt. If sweating has been great or if large amounts of water cannot be taken both with the drug and for 24 hours afterward, no sulfadiazine or sulfanilamide tablets are to be taken.

■ 12. SPLINTING OF INJURED ARM OR LEG.—A severely wounded arm or leg should, if possible, be splinted (par. 17) or placed in a sling after dressings have been applied, even if no bone is broken; this will keep the injured part at rest and will help to prevent bleeding, to lessen shock, to relieve pain, and to prevent infection.

■ 13. WOUNDS REQUIRING SPECIAL ATTENTION.—*a. Wounds extending into the chest.*—If there is a wound of the chest through which air is sucking in and blowing out, the life of the person may depend upon quickly applying a dressing which is large enough to cover the wound and which completely stops the flow of air through the wound. If this does not stop the back and forth movement of air, apply more dressing. A large piece of raincoat, overcoat, blouse or shirt applied tightly over the dressing may be useful in making the dressing airtight. A person with a wound of the chest will be more comfortable and breathe more easily if he lies on the injured side.

b. Wounds entering the abdomen.—If a bullet or other object has gone into or through the abdomen, the injured person should be given nothing to eat or drink. Under no circumstances give anything more than a few small sips of water to wet his lips. If the abdominal organs have come through the wound do not try to put them back. Sprinkle sulfanilamide over the wound and organs, and put on a large sterile dressing.

c. Wounds of the jaws, mouth, and face.—If there is a wound of these parts, the face of the wounded person should be kept pointed toward the ground in order to prevent blood from getting into the back of the throat where it may cause choking. Until bleeding stops, keep the person in a sitting position with his head bent forward. If it is necessary for him to lie down, or if he must be carried on a litter, keep his face pointed to the ground.

SECTION III

FRACTURES, DISLOCATIONS, AND SPRAINS

■ 14. TYPES OF FRACTURES.—A *simple* fracture is a break in a bone. A *compound* fracture is one in which there is a flesh wound which extends through the skin and down

to the broken bone. The flesh wounds in compound fractures are usually caused by the sharp ends of the broken bone or by bullets or fragments of high explosive shells, grenades, or bombs. Compound fractures are more serious than simple fractures because of the danger of infection in the flesh wound and because shock is usually greater. Careless handling of a simple fracture may cause it to become a compound fracture.

■ 15. SIGNS AND SYMPTOMS OF FRACTURE.—One or more of the following signs or symptoms may be present when there is a fracture:

a. Pain and tenderness near the fracture.

b. Partial or complete loss of ability of the injured person to move the part.

c. Deformity (unnatural shape).

d. Swelling.

e. Discoloration (blueness about the point of injury).

f. Grating of bone ends may be felt, but no attempt should be made to produce this.

■ 16. FIRST AID FOR FRACTURES.—*a.* Handle all persons with fractures, or even suspected fractures, with the greatest gentleness; rough or careless handling causes pain and shock. Immediate transportation of a person with a serious fracture is sometimes harmful even if done very carefully; this is especially true of fractures of the thigh, hip, leg, or back, and in all cases in which shock has already appeared. Give first aid, including splinting of the fracture, where the injured person is lying:

b. Straighten the limb by pulling gently but steadily upon its lower end.

c. Keep up this steady pull and support the limb on either side of the fracture until a splint is applied.

■ 17. SPLINTS.—*a.* A splint should be as wide as the limb and long enough to prevent movement of the next joint in either direction from the fracture. Temporary splints can be made from many common materials such as shingles, pieces of board, bayonet scabbards, pieces of tin, wire mesh, and folded blankets. Pad splints well on the side toward the skin and bind them securely in place at several points

above and below the fracture but not over the fracture.

b. Be sure that bandages are not so tightly bound as to stop the circulation of blood when swelling of the limb occurs, as it usually does after a fracture. Swelling, coldness, stiffness, blueness, or numbness of a foot or hand is often due to too tight bandaging. If any of these signs are noticed, loosen the bandages which hold on the splints but do not remove them.

■ 18. SLINGS.—In fractures or other severe injuries of the arm or shoulder, the arm should usually be supported by a sling, in addition to the use of splints or other first-aid measures. A triangular bandage (pars. 72 and 73) makes a very good sling (figs. 12, 13, 14, and 15), but arm slings may be made from ordinary bandages, clothing, or by using safety pins to fasten the coat or shirt sleeve to the front of the coat or shirt. The coat flap or shirt tail may be used as a sling by pinning it to the coat or shirt or by punching a hole through the lower edge of the flap or tail and buttoning this to one of the upper coat or shirt buttons. Various types of slings are shown in figures 12 to 18, inclusive.

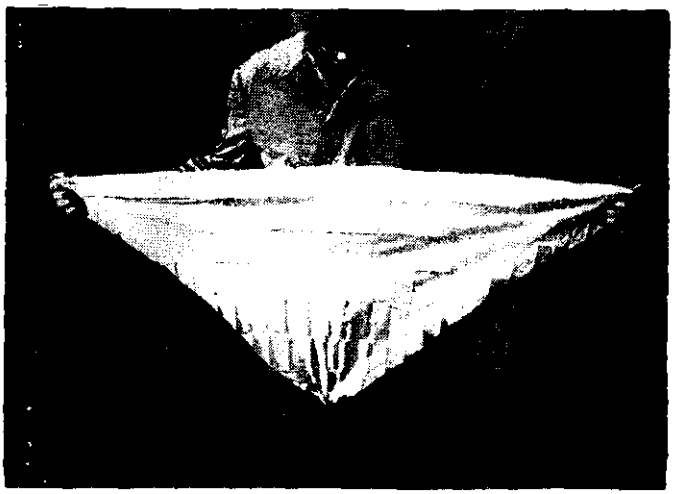

FIGURE 12.—Triangular bandage.

FIGURE 13.—Sling made with triangular bandage—first step.

FIGURE 14.—Sling made with triangular bandage—second step.

FIGURE 15.—Sling made with triangular bandage—completed.

FIGURE 16.—Sling made with shirt tail.

FIGURE 17.—Sling made with coat flap.

FIGURE 18.—Sling made with shirt sleeve.

■ 19. FRACTURES WITH FLESH WOUNDS (COMPOUND FRACTURES).—In fractures with flesh wounds, both the flesh wound and the fracture require first-aid measures. Stop bleeding, sprinkle sulfanilamide into the wound, and bandage with a sterile dressing. If the bone is sticking through the skin, do not push it back. Straighten the injured part by gently pulling upon it, and apply a splint.

■ 20. FRACTURES OF ARM ABOVE THE ELBOW.—Apply two splints, one on the inner side from the armpit to the elbow

FIGURE 19.—Splints and sling for fracture of arm above the elbow

and another on the outer side from the shoulder to the elbow as shown in figure 19. Support the forearm and hand with a sling.

If no better means are at hand for splinting a broken arm, bind it to the body, keeping the forearm bent at the elbow, with the hand near the opposite shoulder, as shown in figure 20.

■ 21. FRACTURES AT OR NEAR THE ELBOW.—Place the forearm and hand in a sling which also covers the lower part of the

upper arm as shown in figure 15. If the elbow cannot be bent because of pain or swelling, apply a single straight splint extending from the upper part of the upper arm to the palm of the hand, as shown in figure 21.

FIGURE 20.—Upper arm bound to body as a means of splinting.

■ 22. FRACTURES OF ARM BELOW THE ELBOW (FOREARM).— With the arm bent half way at the elbow, apply a splint to the inner surface, extending to the tips of the fingers and another to the outer surface, also extending to the finger tips, as shown in figure 22.

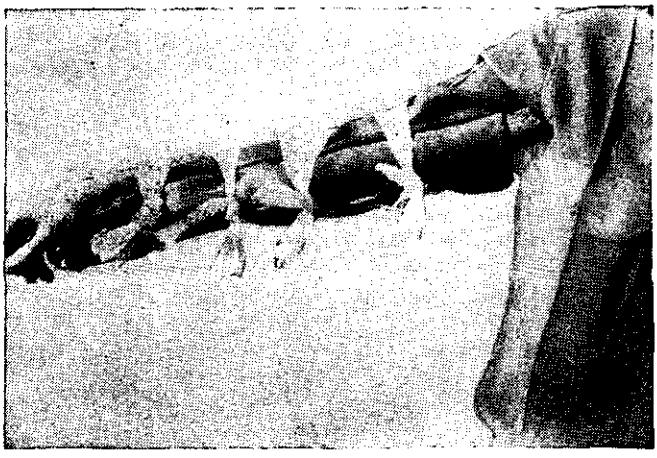

FIGURE 21.—Straight splint for fractures at or near the elbow (when the elbow cannot be easily bent).

FIGURE 22.—Splint for fracture of forearm.

■ 23. FRACTURES OF COLLAR BONE.—Bend the forearm to a right angle in front of the body and place it in a sling as shown in figure 15.

■ 24. FRACTURES OF LEG, KNEE, OR ANKLE.—Apply two splints, one on the outside, the other on the inside of the limb, extending from above the knee to beyond the foot. Support can be given by a splint made of two sticks padded with

FIGURE 23.—Splint for fracture of leg, knee, or ankle—intermediate step.

clothing or a blanket, as shown in figures 23 and 24. A piece of tin, molded in the form of a gutter, makes a very good splint for leg fractures. If there are no other means of splinting a broken leg, pad it well and bind it to the other leg. In snow country, skis may be used as splints.

■ 25. FRACTURES OF THIGH OR HIP.—It is especially important to apply a splint before moving persons with such fractures. Apply a long splint, reaching from the armpit to beyond the foot on the outside, and another from the crotch to the

FIGURE 24.—Splint for fracture of leg, knee, or ankle—final step.

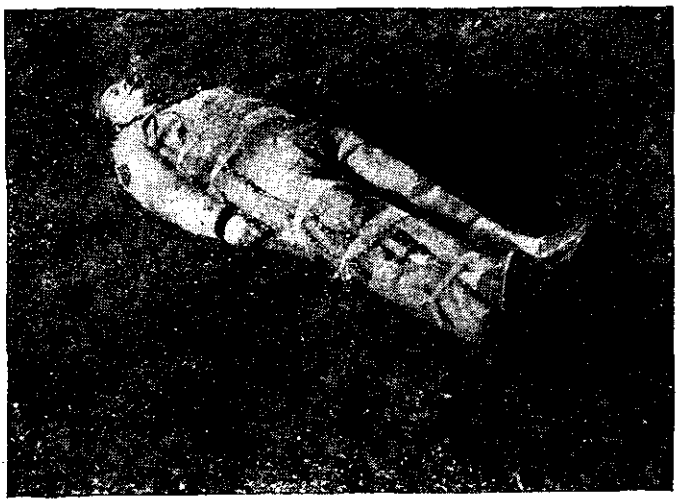

FIGURE 25.—Splint for fracture of thigh or hip.

foot on the inside, as shown in figure 25. A blanket rolled into two rolls to form a trough will help to keep a broken leg steady. If there is no other means of splinting a broken thigh, bind the injured leg to the well leg. If an injured person with a fracture of the leg must be moved before a splint can be applied, carry him as gently as possible, supporting the injured limb above and below the fracture and keeping it straight as shown in figure 26.

FIGURE 26.—Support above and below fracture of right lower leg near knee.

■ 26. FRACTURES OF THE JAW.—For a simple fracture of the jaw, apply a bandage which extends under the jaw and over the top of the head, holding the teeth closed; this will support the jaw and keep it at rest. For a compound fracture of the jaw, with bleeding into the mouth, apply a dressing which covers the flesh wound but which will not keep the wounded person from spitting out the blood.

■ 27. FRACTURES OF SPINE (NECK OR BACK).—It is often impossible to be sure that there is or is not a fracture of the spine. Whenever a person has been in an accident in which his back may have been sharply bent or struck, keep in mind

that either his neck or back may have been fractured. Pain in the back or neck, loss of power to move all or part of an arm or leg, or lack of feeling in an arm or leg, may follow a fracture of the spine, but one or more of these symptoms may be absent. If a broken neck or back is suspected, the injured person's head should not be lifted even to drink water. Do not let the injured person try to stand or sit up. Very gently straighten him out and roll (do not lift) him onto his back, being careful not to bend or twist his neck or back.

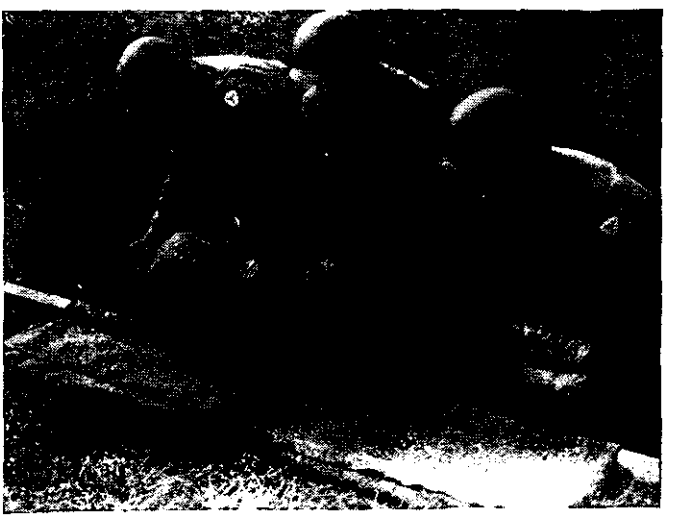

FIGURE 27.—Person with a fracture of the spine being *rolled* onto a litter.

Unless it is absolutely necessary to do otherwise, leave to trained Medical Department personnel the transportation of a person who has an injured back. If, however, it is necessary to move a person who has such an injury, he should be rolled in the same careful way when being moved onto a litter (see par. 65) as shown in figure 27. Put a rool of clothing or blanket about 4 inches thick under the small of his back, as shown in figure 28. If it is thought a person may have a broken neck, keep his head from rolling from side to

FIGURE 28.—Support of fractured spine by means of a roll under the back.

FIGURE 29.—Support of head of person with fractured neck.

side by placing something such as blanket rolls, folded clothes, or stones on each side of his head to steady it as shown in figure 29. When the combat situation permits, three or more persons should help in moving anyone who has a fracture of the back or neck; one person should support the buttocks and legs, a second person should support the chest and shoulders, and a third person should support the head to prevent bending or twisting of the neck. Unless a person with an injured back can be moved with the care outlined above he should not be moved until medical personnel arrives.

■ 28. DISLOCATIONS AND SPRAINS.—When a bone gets out of place at a joint, the condition is called a dislocation. When the ligaments around a joint are torn or bruised, the condition is called a sprain. In both these conditions pain is usually severe, and shock may be present. It is often impossible to tell the difference between a sprain, a dislocation, and a fracture; when this is the case, the first aid given should be the same as for a fracture.

a. First aid for dislocations.—(1) If the injury is to the shoulder, elbow, wrist or hand, place the arm in a sling.

(2) If the injury is to the hip, knee, ankle or foot, splint the limb and give the same care as for fractures in these parts of the body.

b. First aid for sprains (strains).—(1) In severe sprains of the shoulder, elbow, wrist, and hand, place the arm in a sling. For a sprain of the wrist, firm bandaging will give relief.

(2) In severe sprains of the hip, knee, ankle, or foot, it is sometimes necessary to apply a splint just as for a fracture of these parts. Firmly bandaging an ankle sprain sometimes gives relief and makes it possible to walk without much pain.

SECTION IV

COMMON EMERGENCIES AND HEALTH MEASURES

■ 29. SNAKE BITE.—*a.* Snake venom acts rapidly, so first aid must be given quickly to prevent the poison from being spread throughout the body.

b. When a snake bite is on an arm or leg put on a tourniquet at once, placing it between the trunk of the body and the

bite. Apply the tourniquet above the knee, in foot and leg bites; above the elbow, in hand and arm bites. A necktie, belt, handkerchief, or triangular bandage can be used as a tourniquet. The tourniquet should be loosened every 20 to 30 minutes for 10 or 15 seconds.

c. Apply iodine to the area around the bite.

d. Paint with iodine, either the lancet in the snake-bite kit (figs. 30 and 31), the blade of a pocket knife, or a razor blade.

FIGURE 30.—Snake-bite kit—outside view.

e. Make cross incisions ¼-inch long and ¼-inch deep over each fang mark (fig. 32).

f. Apply suction to the wound for 20 minutes before loosening tourniquet. Keep up suction for at least three 20-minute periods. This can be done by mouth (fig. 33), if a snake bite kit is not handy; snake venom is harmless in the mouth unless there are cuts or sores. If a snake-bite kit is available, use the small oval cup for making suction on fingers and toes; for flatter surfaces use the round cup (fig. 34). Press the cup tightly over the incisions and press and release the plunger to produce suction. Suction may be increased by repeating this movement (figs. 34 and 35).

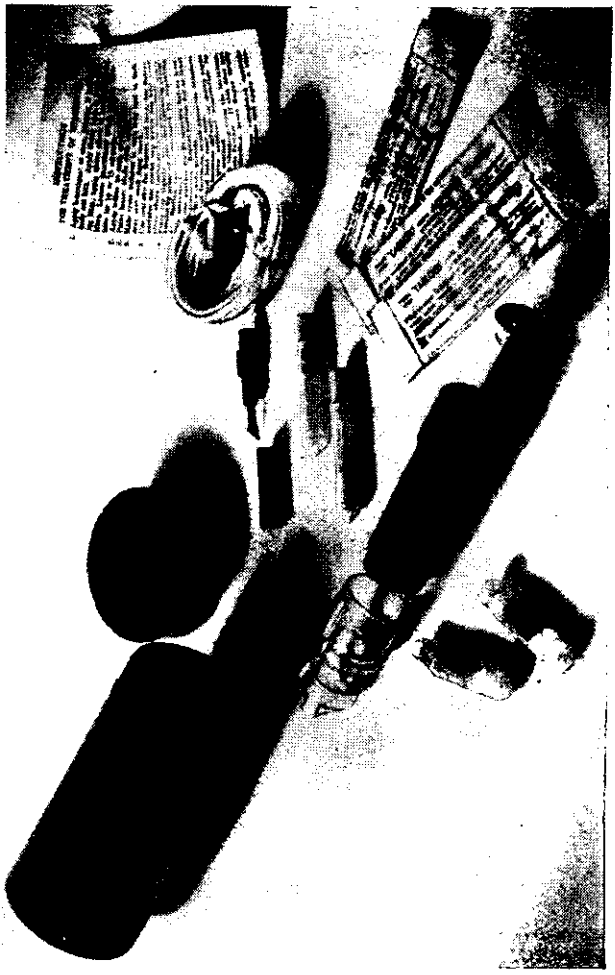

FIGURE 31.—Snake-bite kit—contents.

FIGURE 32.—Cross incisions through snake-bite fang-marks.

FIGURE 33.—Suction by mouth for snake bite.

FIGURE 34.—Suction with suction apparatus for snake bite—plunger down

FIGURE 35.—Suction with suction apparatus for snake bite—plunger released.

FIGURE 36.—Sprinkling sulfanilamide into incision after suction for snake bite.

FIGURE 37.—Application of dressing over incisions for snake bite.

g. If the breathing of a person who has been bitten by a snake becomes difficult or shows signs of stopping, give artificial respiration as shown in figures 47 and 48.

h. If there is a great amount of bleeding from the incisions, place a gauze compress on the wound and press the thumb or one or more fingers firmly over the incisions.

i. After the last period of suction has been completed, remove the torniquet; sprinkle sulfanilamide into the incisions (fig. 36); and apply a sterile dressing (fig. 37).

■ 30. INSECT BITES AND STINGS.—*a.* These can often be prevented by sleeping under a mosquito net, wearing a head net and gloves, and by using insect repellent (see pars. 76 and 77). To apply insect repellent, turn the bottle upside down and spread a small amount of the liquid over uncovered skin surfaces. One application will usually keep insects away for 2 hours.

b. For severe insect stings such as those caused by bees and wasps, the application of a folded cloth thoroughly wet with cold water will help relieve discomfort. Do not scratch the stung area; to do this increases the danger of infection.

c. First aid for poisonous spider bites is the same as for snake bites.

■ 31. TICKS, FLEAS, AND LICE.—When in a region infested with these vermin, all clothing should be removed at least once a day and the body and clothing carefully inspected. The use of insecticide powder for body crawling insects (fig. 38) will help greatly in keeping away vermin, especially lice. It is furnished to the individual soldier through his unit commander when in an area where it is likely to be needed. For the destruction of lice in clothing, lightly dust the seams and infested parts at weekly intervals. For the prevention of chigger and tick bites, dust the belt line and the inner side of the clothing of the lower extremities including the socks and shoes. When troops are sleeping on the ground, their bedding should be protected from infestation with crawling insects by lightly dusting it with the powder at weekly intervals. When removing ticks, be careful not to leave the head of the tick in the skin, and do not crush the tick. The tick may be removed properly by pulling gently but steadily

upon its body or by placing a lighted cigarette close to its body so that it releases itself from the skin. Paint the area of a tick bite with iodine. Clothing in which fleas or lice are found should be disinfected.

FIGURE 38.—Insecticide powder for body crawling insects.

■ 32. JELLY FISH, PORTUGUESE MAN-OF-WAR, AND NETTLE STINGS.—*a.* To relieve the burning sensation caused by any of these, dry the skin immediately and press one or both of the hands firmly against the painful area.

b. Rubbing the skin with sand or scrubbing the skin with soap and water to remove tentacles is also helpful.

■ 33. LEECHES.—After marching through water, brush, or grass where there are leeches, take off and examine shoes, leggins, and socks. Remove any leeches which have become attached to the body, and cover the bite with a small sterile dressing. Oozing of blood may keep up for half an hour or longer after a leech has been removed, but this is not serious.

■ 34. ANIMAL BITES.—First aid for animal bites is the same as for wounds from other causes.

■ 35. POISONOUS PLANTS.—*a. General.*—Poison ivy, poison oak, and poison sumac are the common plants that produce skin irritation. Poison ivy differs from other creepers of a somewhat similar appearance by having three leaves instead of five (fig. 39). Poison oak is a shrub or small tree (fig. 40). Poison sumac, also known as poison elder or dogwood, is a shrub or small tree (fig. 41). The harmful part of these plants is the sap. Actual contact with the plant is not necessary as the sap can be carried on clothing, tools, hands, bodies of insects, or in smoke coming from fires burning the plants.

FIGURE 39.—Poison ivy.

b. Control and first-aid measures.—(1) If possible wear gloves while working near any of these plants.

(2) Wash, or expose to the sun for several hours, all clothing, tools, or other implements which have been near the plants.

(3) Wash with strong soap all parts of the body which have been exposed to the plants. The washing must be prompt and thorough, otherwise it will tend to spread the poison.

(4) After a rash has developed, do not wash the affected parts. Avoid scratching; this makes the condition worse.

FIGURE 40.—Poison oak.

FIGURE 41.—Poison sumac.

■ 36. REMOVAL OF FOREIGN BODIES.—*a. From the eye.*—(1) Close the eye and allow tears to gather. *Do not rub the eye.* After a few minutes, open it again and the foreign body may be washed out by the tears. If the foreign body is under the lower lid, pull the lid down as shown in figure 42, have the person look up, and brush out the foreign body with the corner of a clean handkerchief.

(2) If the foreign body is under the upper lid, hold the eyelashes of the upper lid with the index finger and thumb of one hand (fig. 43); place a match or pencil, held in the other hand, over the middle of the upper lid (fig. 44); then turn the lid over the match (fig. 45) and have the person look down. The foreign body may then be seen and removed with the corner of a clean handkerchief.

(3) If the object cannot be easily wiped away from the eyeball or eyelid by brushing it with the corner of a handkerchief, close the eye and lightly apply a bandage. If a first-aid kit containing butyn with metaphen eye ointment is available, apply some of this ointment to the inner surface of the lower lid and cover the eye with an eye dressing as shown in figure 46.

(4) When acids or strong alkalies get into the eye, hold the eyelids wide open and wash the eye with large amounts of water. Then apply butyn with metaphen eye ointment, if available, and cover the eye with an eye dressing.

b. From the ear.—Never use pins or wire to remove objects from the ear, as there is danger of seriously injuring the eardrum. Insects in the ear can usually be killed by dropping in a little oil; if no oil can be obtained, use water instead. If the foreign body is a bean or other object which will swell if it gets wet, do not put water in the ear.

c. From the nose.—These usually are not dangerous. Try to remove the foreign body by gently blowing the nose. No attempt should be made to remove the object with forceps or wire; to do this usually causes swelling and jams the foreign body tighter.

d. From the throat.—If a foreign body in the throat can be reached with the finger, it may be picked or hooked out. See a medical officer at the earliest possible time.

e. From the skin.—Splinters, pieces of grit, or other foreign bodies may be removed by picking them out with a sharp

FIGURE 42.—Removal of foreign body from lower lid or eyeball.

FIGURE 43.—Removal of foreign body from upper lid or eyeball—first step.

FIGURE 44.—Removal of foreign body from upper lid or eyeball—second step.

FIGURE 45.—Removal of foreign body from upper lid or eyeball—third step.

blade which has been sterilized by heating in a flame, or by means of the small forceps which are in some first-aid kits. Paint with iodine the area from which the splinter has been removed and then apply a sterile adhesive compress or other small bandage. As soon as possible after the first-aid removal of a foreign body, report the fact to a medical officer.

FIGURE 46.—Eye dressing.

37. DROWNING.—*a. General.*—Being under water for over 5 minutes usually causes death, but an effort should always be made to revive a person who seems to be drowned unless it is known that the body has been under water for a very long time. Artificial respiration must be started as soon as possible after the person has been taken out of the water.

b. Method of giving artificial respiration (see figs. 47 and 48).—(1) Lay or turn the drowned person face down. Force his mouth open, pull his tongue forward, and remove false teeth, vomitus, or debris from his mouth and throat.

FIGURE 47.—Prone pressure method of artificial respiration—first position.

FIGURE 48.—Prone pressure method of artificial respiration—second position.

(2) Raise him by the hips to drain any water from his lungs.

(3) Lay him face down again, if possible at a nearby spot where his head will be lower than his feet. One of his arms should be extended above his head, the other should be bent at the elbow so that one side of his face can rest on his hand. (See fig. 47.)

(4) Kneel astride the drowned person's thighs, with the knees far enough from his hips so that pressure can be made on his lower ribs. Place the palms of the hands on the small of his back with the fingers on his lower ribs, so that the little fingers just touch his lowest rib, the thumbs and fingers are in their natural position, and the tips of the fingers are out of sight just around the sides of his chest. The heels of the hands should be placed as far as possible from his backbone without slipping off (fig. 47).

(5) With arms held straight, swing forward slowly so that the weight of the body is gradually brought to bear upon the drowned person. (See fig. 48.) This procedure should take about 2 seconds. Do not bend the elbows while giving artificial respiration.

(6) Now immediately swing backward so as to remove all pressure completely and suddenly. Leave the hands in place if possible.

(7) After about 2 seconds, repeat the procedure. The combined period of pressure and release should take about 4 or 5 seconds and should be repeated 12 to 15 times a minute. Do not increase the cadence above 15 times per minute.

(8) Keep up artificial respiration without stopping for 2 hours or longer, unless the person to whom it is being given begins to breathe normally before then or is declared by a medical officer to be dead.

(9) After artificial respiration has been started, the drowned person should if possible have his clothing loosened and he should be wrapped in a blanket or dry clothing.

(10) When a drowned person regains consciousness, he should be kept lying down. Hot tea or coffee can be given as soon as complete consciousness has returned.

(11) If breathing stops after it has once started begin artificial respiration again at once.

(12) Because of the length of time that artificial respira-

tion may be necessary, more than one person may be required to give it.

■ 38. ELECTRICAL SHOCK.—The rescue of a person from a live wire is always dangerous. If the switch is near, turn off the current, but do not lose time in looking for the switch. Use a dry pole, dry clothing, dry rope, or some other material which will not conduct electricity, when removing a person from a live wire (fig. 49). If a pole of some sort is not close at hand, a person in contact with a live wire can be dragged

FIGURE 49.—Rescue of a person from an electric wire.

from the wire by means of a loop of dry cloth. Start artificial respiration as soon as the person is freed from the wire. Early stiffening of the body is not always a sign of death; keep up artificial respiration for 2 hours unless the person to whom it is being given begins to breathe normally before then or is declared by a medical officer to be dead. Electrical shock due to being struck by lightning is treated in the same manner as electrical shock due to a live wire.

■ 39. CARBON MONOXIDE POISONING.—Suffocation due to carbon monoxide occurs most often from inhaling motor vehicle exhaust gas, or from being in a poorly ventilated tent or other

shelter in which a stove is burning. The first-aid measures for carbon monoxide poisoning are discussed in paragraph 72.

■ 40. FAINTING.—When a person who has fainted falls, it is usually best to let him lie quietly; loosen any tight clothing. If a person is about to faint or has actually fainted while sitting up, lower his head between his knees.

■ 41. UNCONSCIOUSNESS.—*a. General.*—It is frequently impossible to find out the cause of unconsciousness; always think of the possibility of bleeding, sunstroke, or injury to the head.

b. First-aid measures.—Keep the person lying face down with his head turned to one side. If his skin is very warm and he might have heatstroke, give him first aid as described in paragraph 51*a*. If he is cold, keep him warm. Do not move the person unless absolutely necessary and then do so very carefully. *Do not pour liquids into the mouth of an unconscious person;* to do this may choke him.

■ 42. CONVULSIONS OR FITS.—Convulsions may be due to many causes, including head injuries, epilepsy, poisoning, hysteria, and various illnesses. It is often difficult to find out the exact cause of convulsions. First aid for a person having convulsions consists of loosening his clothes, keeping him from hurting himself while tossing about, and forcing a rolled handkerchief or towel or a stick between his teeth to keep him from biting his tongue. Do not use any more force than necessary to keep him from injuring himself.

■ 43. HEAD INJURIES.—*a. General.*—This is a term applied when a person has been "stunned" or "knocked out" by a blow on the head, or by being struck in the head by a bullet, shell fragment, or other missile. In severe head injuries the person cannot be awakened; there may be bleeding from the nose or ears; the breathing is deep and snoring; and there may be paralysis of part of the body. It is often impossible to tell how serious a head injury is.

b. First-aid measures.—If the injured person is conscious, he should be laid flat, with his head slightly raised. Unless a person with a head injury comes to in a few minutes, turn him face down, with his head turned to one side. He should be kept warm. No violent efforts should be made to wake

him up. Shaking his head or slapping his face and neck are dangerous things to do, because they make the injury worse.

■ 44. ABDOMINAL PAIN.—Pain in the abdomen or "stomach ache" may be due to many causes, some of which are serious. Whenever there is pain in the abdomen, think of the possibility of appendicitis and remember that no food, only small sips of water, and *no laxatives* should be taken.

■ 45. PURIFICATION OF DRINKING WATER.—*a.* Do not drink water which has not been declared safe, unless purified by one of the following methods:

(1) Treat it with Halazone (water purification) tablets, using the tablets as directed on the container.

(2) Boil it for 1 minute.

b. Caution: Do not feel that ice or water flowing under ice is safe to drink without first treating it with water purification tablets or boiling it.

■ 46. CARE OF THE FEET.—*a.* Wash the feet with soap and water and change socks daily. After washing the feet, dry them carefully, especially the spaces between the toes; then dust thoroughly with issue foot powder.

b. If a blister appears, wash the blistered area with soap and water; then empty the blister by sticking it at the lower edge with a pin which has been passed through a flame. Do not remove the skin. Cover the emptied blister with adhesive plaster bandage.

■ 47. CARE OF THE CROTCH.—Chafing of the inner sides of the thighs and of the scrotum can usually be prevented by washing these parts every day, drying them thoroughly, and dusting with issue foot powder. If there is rawness, do not use the foot powder, but wash and thoroughly dry the parts daily.

■ 48. MISCELLANEOUS.—*a. Poisonous weapon wounds.*—Natives in some parts of the world put poison on the barbs of arrows and spears. First aid for wounds caused by poison arrow or spear wounds is the same as for snake bite. (See par. 29.)

b. Poisonous fruits and drugs.—When a poisonous fruit or a poisonous drug has been swallowed, the important first-aid measure is to cause vomiting as soon as possible. Drink one

to two canteenfuls of water, preferably lukewarm and salty, as rapidly as possible, then tickle the throat with the finger as far down the throat as it will reach, to start vomiting. Repeat these measures several times, then see that the person who has been poisoned keeps quiet and warm.

c. Nosebleed.—Keep the person sitting up and quiet; loosen the collar, tie, or anything tight around the neck; have him breathe through his mouth and not blow his nose; if possible put something cold over the nose and against the back of the neck.

SECTION V

EFFECTS OF SEVERE HEAT AND MEASURES FOR USE IN THE DESERT

■ 49. GENERAL.—Conditions caused by heat include burns on the surface of the body, and also the general body effects of heat such as heat stroke, heat exhaustion, and heat cramps. People who have lived for several years in very hot climates usually get along well in spite of the heat because they have gradually become conditioned and have learned how to take certain precautions about eating, drinking, dressing, and exercising. Although the general body effects of heat are of special importance to desert and jungle troops, the possible bad effects of becoming overheated concern all troops, including those in the arctic, where overheating can result from wearing too many clothes while exercising.

■ 50. BURNS.—Burns may be caused by dry heat, hot liquids, chemicals, or electricity. Overexposure to the sun can produce very severe burns which require first-aid measures similar to those necessary for burns due to other causes. First aid for burns caused by acids, alkalies, or other common chemicals, is discussed in *b* below. First aid for burns due to war gases is discussed in paragraph 69. Shock and infection are frequent complications of burns and require the same measures used for preventing or overcoming shock and infection caused by wounds.

a. First-aid measures.—(1) Do not pull clothes from a burned part of the body; instead, cut or tear the clothes and then gently lift them off. Do not try to remove pieces that stick to the skin.

(2) Keep a burned person quiet and warm.

(3) Do not break blisters which form following a burn.

(4) Never apply iodine to a burn.

(5) Do not touch a burn with dirty hands, clothes, or anything else unclean.

(6) If a first-aid kit containing burn ointment is handy, apply boric acid, sulfadiazine, or other burn ointment, using the wooden paddle applicator to spread the ointment over the burn or onto the sterile dressings which are to be put on the burn.

(7) When burned, take by mouth, along with a large amount of water, the eight sulfadiazine tablets (or the twelve sulfanilamide tablets found in some packets instead of sulfadiazine tablets) which are in the sealed packet carried in the first-aid pouch attached to the cartridge belt. If sweating has been great or if large amounts of water cannot be taken both with the drug and for 24 hours afterwards, no sulfadiazine or sulfanilamide tablets are to be taken.

(8) If pain is very great, a dose of morphine may be given as described in paragraph 110 and shown in figure 97.

(9) Whenever a burn covers a large area of the body, three or more canteenfuls of water to which salt has been added (two salt tablets or ¼ teaspoonful of table salt to each canteenful) should be taken every 24 hours.

b. Acid, alkali, and other common chemical burns.—Burns caused by acids, alkalies, or other common chemicals should be washed with large amounts of water, lukewarm if possible, until the chemical is completely removed; then spread boric acid, sulfadiazine, or other burn ointment, or sprinkle sulfanilamide over the burn, and apply a sterile dressing.

■ 51. HEATSTROKE, HEAT EXHAUSTION, AND HEAT CRAMPS.—All these conditions are caused by heat, but differ in their symptoms and in the first-aid measures needed for them. The general body effects of heat can usually be prevented by avoiding unnecessary exposure to extreme heat; by keeping living and working quarters as cool as possible; by keeping the head and body covered when in the sun; by wearing light, loose fitting outer clothes; by taking plenty of salt with food, and by drinking enough water to which salt tablets have been added. The bad effects of overheating and sweating are less likely to happen if short rest periods

are taken during the heat of the day. It is better to drink small amounts of water frequently instead of large amounts all at once. Alcoholic and iced drinks, including ice water, should be avoided. Do not eat large, heavy meals. Eat sparingly during the heat of the day. Fruits and vegetables, preferably cooked, and fruit juices are good types of food in a hot climate. Avoid unnecessary physical exercise. Keeping the skin clean and free from dust and grease helps in the control of body heat.

a. Heatstroke (also known as sunstroke).—(1) *General.*—Heatstroke is often caused by direct rays of the sun, but it can also happen even when a person has been under cover. The symptoms are headache, dizziness, irritability, seeing objects red or purple, and sometimes vomiting; the skin is hot and dry; the face is flushed and there is high fever. The pupils of the eyes are usually very small. Unconsciousness usually occurs, and the body becomes limp; sometimes there may be convulsions.

(2) *First-aid measures.*—Remove the person to a shady, cool place if possible, and remove all clothing except light underwear. Lay him on his back with shoulders raised. Cool by sprinkling large amounts of cool water evenly over the body, and fanning continuously to cause rapid evaporation. Apply cool wet cloths to the head, changing them frequently. Briskly rub the arms, legs, thighs, and trunk. Do not overdo these things; stop every few minutes to note their effects. When the person is conscious give cool water containing two salt tablets to a canteenful of water. If the skin gets hot again, repeat the measures.

b. Heat exhaustion.—(1) *General.*—The first signs of heat exhaustion are an "all in" feeling, dizziness, nausea, and unsteady walking. The face is pale, the skin is cold, and there is severe sweating. Fainting may occur. The pupils of the eyes are usually very large.

(2) *First-aid measures.*—Remove the person to a cool or shady place, lay him on his back and have him drink three to five canteenfuls of cool salt water (¼ teaspoonful of table salt or two salt tablets to a canteenful of water) in a 12-hour period.

c. *Heat cramps.*—(1) *General.*—Heat cramps usually occur after a person has been sweating a great deal, especially

if extra amounts of salt have not been taken. In this condition there are muscle cramps, especially of the legs and arms; the skin is cool, moist, and pale; breathing is shallow; frequently there is vomiting. There may also be severe weakness and dizziness.

(2) *First-aid measures.*—Heat cramps can usually be prevented by taking extra amounts of salt on days when sweating a great deal. If cramps have already developed, rest in a cool place and take three to five canteenfuls of cool salt water (¼ teaspoonful of table salt or two salt tablets to a canteenful of water) in a 12-hour period.

■ 52. EYE IRRITATION.—*a. General.*—Glare from water or sand in bright sunlight often causes severe irritation of the eyes, as does also wind or blowing sand. Wear sand goggles whenever exposed to bright reflection from sand or water or when there are strong winds or blowing sand.

b. First-aid measures.—Mild irritation of the eyes will usually clear up by simply protecting them from further exposure to bright light by the use of dark glasses. More severe irritation of the eyes can be relieved by the use of boric acid eye ointment, in addition to protection from light.

SECTION VI

EFFECTS OF SEVERE COLD, AND MEASURES FOR USE IN THE ARCTIC

■ 53. GENERAL.—In very cold weather first-aid measures may be needed for frostbite and freezing of various parts of the body, as well as for the general body effects of cold. These conditions can be caused by exposure to snow, ice, cold air, cold mud, or dampness. People who regularly live in cold climates seldom suffer very ill effects from cold, because they know how to protect themselves by proper dressing, eating and habits of living.

■ 54. FROSTBITE AND FREEZING.—Frostbite and freezing are the terms applied to the effects of severe cold on various parts of the body. Although frostbite is less severe than complete or hard freezing of a part, it may cause very serious results. If any of the bad effects of cold should occur, it is very important to recognize them and to know what to do at once, because delay in giving proper first aid may cause perma-

nent injury. Frostbite and freezing may occur either gradually or suddenly, without the person being aware of it, unless certain precautions and warnings are kept in mind.

a. Parts affected and methods of detecting.—(1) The parts of the body most often affected by frostbite and freezing are the feet, ears, nose, hands, cheeks, chin, and forehead. Frostbite and freezing may occur on parts of the body that are well covered as well as on exposed parts.

(2) Men should frequently examine their own exposed parts and those of their companions for signs of the effects of cold.

(3) A grayish or whitish waxy appearance of the skin is an early sign of freezing. Whenever any part of the body shows this sign, first-aid measures must be started at once.

(4) Distinct pain is usually not present as a warning that frostbite or freezing is occurring.

(5) Loss of feeling when the skin is touched is another important sign.

(6) In very cold weather, by wrinkling the face from time to time, stiffness caused by freezing can be discovered.

b. Protective measures.—(1) Wear enough of the proper clothes to keep comfortable, but do not wear more or heavier clothes than required, as this will only cause unnecessary weight and overheat the body. In very cold climates it is frequently necessary to change the amount of clothing several times a day, depending on how much the person is moving about or exercising.

(2) Many chilled hands and feet are due to overdressing with tight clothing that does not permit proper circulation of blood. Use only socks, shoes, and mittens or gloves which give plenty of room and make it possible to wiggle the fingers and toes. If leggings are being worn, do not lace them too tightly. Avoid the use of garments which fit tightly at the shoulder. Keep pack straps placed so that they do not press on the arms or under the armpits. During cold winds, protect the face by pulling a parka hood or coat collar forward on the windward side, or by shielding the face with a gloved hand.

(3) Avoid long exposure of bare hands and wrists. If the hands become extremely cold and stiff, it takes a long time to get them back to normal. At temperatures below freezing,

mittens which do not separate the fingers are preferable.

(4) Keep every part of the body dry at all times when in a cold climate. Damp or wet skin is much more likely to become frostbitten, and one of the most frequent causes of chilling and frostbite is wet clothing. Clothing may become wet from perspiration or melted snow. If clothing, socks, footgear, or gloves get wet from any cause, they must be dried or changed at once. Spare dry socks, insoles for boots, liners for mittens, and extra underclothes should always be carried. When exercising, even in very cold weather, it is possible to perspire a great deal; either shed some clothing or open the clothing and remove the parka hood to allow air circulation so that the moisture of perspiration may escape. If this is not done, clothing becomes soaked with sweat. It then freezes stiff and becomes not only very uncomfortable, but may cause the person wearing it to suffer serious effects of cold.

(5) Remember that overheating and sunburn can occur in snow country.

(6) Do not touch cold metal such as a canteen cap or mouthpiece with the bare hands, tongue, or lips. The skin immediately freezes to such surfaces and, to be released, the metal should be warmed; otherwise the skin will be pulled off. Metal whistles and the mouthpieces of bugles must be carried in a pocket near the body so as to warm them before they are placed against the lips.

(7) Do not eat snow or ice; to do this may cause freezing of the lips and tongue. Snow or ice which is to be used to quench the thirst should be melted by placing its container underneath warm clothes or over a fire. Melted ice or snow which is to be used for drinking purposes should be sterilized by boiling, or by using water purification tablets as described in paragraph 45.

(8) Prevent freezing of the penis when urinating by protecting it from the wind and afterwards by carefully buttoning the clothes.

(9) Hot food and nonalcoholic drinks, at frequent intervals, are helpful.

(10) In very low temperatures, deep and rapid breathing while exercising sometimes causes frosting of the lungs. The air entering the lungs will be less cold if a gloved hand is

held in front of the nose and mouth while breathing, or if the bottom of a parka hood is pulled forward so that the warm air near the body can be breathed.

(11) Avoid any cramped positions which can interfere with circulation of the blood.

(12) Do not wash too often, because skin from which all natural oil has been washed away freezes more easily.

(13) It is usually best to keep moving while outdoors in a very cold climate. If, however, a strong wind is blowing, or especially if very tired, it is best to stop and rest, digging in if possible.

c. *First-aid measures.*—(1) Thaw a frostbitten or frozen part slowly. Thawing can be done best by applying the bared part to a warm part of the person's own body or to a warm part of the body of another person; and then covering it with blankets or extra clothing.

(2) Do not bring a frostbitten or frozen part close to a fire or anything hot. If a person who has been frostbitten is brought indoors, the room into which he is brought should be only moderately warm.

(3) If pain becomes too severe during or shortly after thawing, thawing should be slowed by exposing the part to cool air or water.

(4) Wrap the person in warm blankets and give hot non-alcoholic drinks.

(5) After thawing, keep the part at absolute rest and, if an arm or leg, slightly raised. A hand which has been frostbitten or frozen should be carried in a sling. No weight should be borne on feet that have been frostbitten or frozen.

(6) Do not rub a frostbitten part and do not bend frozen limbs or ears, as this will cause further injury to the already damaged tissues. It is especially important not to rub or put snow or ice on a frostbitten or frozen part of the body, as this will increase the freezing.

(7) In severe frostbite or freezing, even the gentlest massage can do great harm.

(8) After thawing, wrap the part lightly with sterile dressings, keep it at a reasonably cool temperature, and keep heavy covers from pressing on it.

(9) Thawing is often very painful, especially if a part has frozen hard. The skin becomes red, or in severe cases,

violet. In time, blisters may appear; these may not show up until several days later and may be of great size. They should not be opened except under supervision of a medical officer.

(10) Dust all blisters, open sores, or darkened areas of skin with sulfanilamide and cover such areas with sterile dressings.

■ 55. WOUNDS AND INJURIES.—*a.* When an accident happens in the cold, shock is very likely to occur, especially if there is considerable pain or severe bleeding. Prevent or overcome shock by covering the injured person with a sleeping bag, extra clothing, blankets, or a tarpaulin; by applying heat to the chest, abdomen, or thighs; by keeping the head and upper part of the body lower than the legs and lower part of the body; and by giving warm nonalcoholic drinks. When available, chemical heating pads are good for warming a person.

b. When using a tourniquet in very cold weather, be careful not to apply pressure for too long a time, otherwise freezing will result. Even tight bandages may dangerously reduce blood circulation, which is already below normal. If a tourniquet is necessary, keep the part beyond the torniquet warm, but be very careful not to heat it above the normal body temperature.

■ 56. SNOW-BLINDNESS.—*a. General.*—Snow-blindness is caused by the reflection of light from snow surfaces. It is most likely to occur on days when clouds are thick enough to hide the sun but not thick enough to produce heavy overcast weather. Snow glasses should always be worn during daylight. If no glasses or ready-made goggles are to be had, slit goggles may be made by cutting slits in a piece of cloth or paper (fig. 50) which can be fitted over the eyes. Blackening the skin around the eyes, including the sides of nose and cheek bone area, with the charred end of a stick also gives some protection against the glare.

b. Signs and symptoms.—The first symptoms of snow blindness are that the person who is developing it cannot see distinctly; actual blindness usually does not occur at once. Later, there is a burning sensation in the eyes, followed by severe eye pain. The pain may not begin until

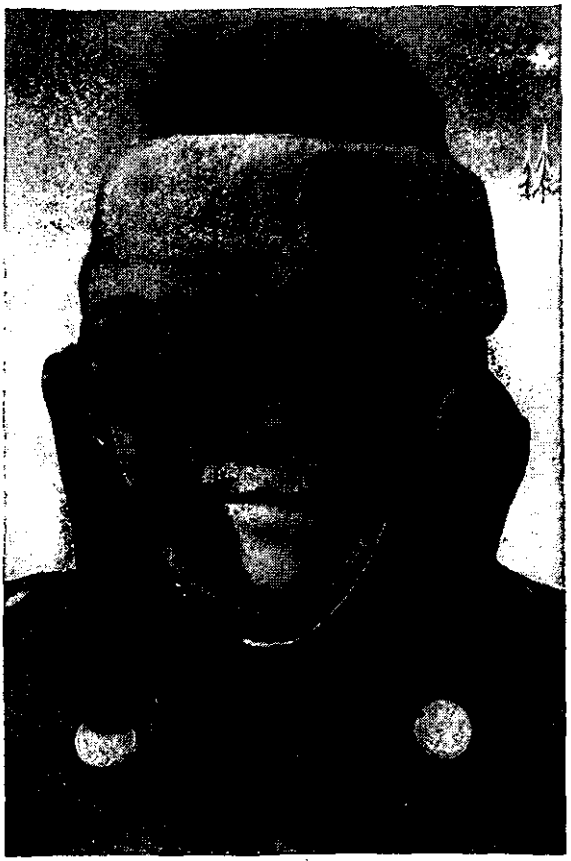

FIGURE 50.—Improvised slit goggles.

several hours after exposure. The eyes become inflamed, and it may not be possible to use them for several days.

c. First-aid measures.—Anyone who has had any symptoms of snow blindness should be kept in a dark place until the pain leaves. If there is no such place, a thick bandage should be placed over the eyes. Cold wet cloths or gauze

applied over the eyes will give some relief from the pain but this can only be done when there is no danger of freezing. If available, apply butyn and metaphen eye ointment, and then put on an eye dressing.

■ 57. CARBON MONOXIDE POISONING.—*a. General.*—(1) Among all the dangers of arctic operations, the danger of suffocation by carbon monoxide is one of the greatest. To troops coming to Arctic regions for the first time, the discomfort of cold is so great that common sense is often lost in an attempt to keep warm. In temporary shelters, stoves or fires should be used only for cooking and then shut off or put out unless it is certain that draft and ventilation is enough to carry off the gases that form; clothing must be depended upon for warmth. If a stove is kept going even for a half hour in an improperly ventilated shelter, a dangerous amount of carbon monoxide may be generated. Carbon monoxide is odorless, and will overcome a sleeping person without warning.

(2) When a closed vehicle becomes stalled in the snow, the engine is generally left running to keep the occupants warm and to avoid difficulty in again starting the motor. If snow drifts over the exhaust pipe and carbon monoxide fills the vehicle, the occupants may be overcome by the gas. When in a stalled vehicle, always keep the exhaust pipe open by getting out frequently and cleaning away the drifted snow. If alone, *do not* go to *sleep* in a closed car while the motor is running. It is possible to insure adequate ventilation without chilling, if windows on the lee side of a car are opened. If possible, at least two men should travel together in a vehicle, so that when rest is necessary they can take turns sleeping. When practicable, two or more vehicles should travel together. A lantern and a blanket will keep a person warm in a stalled vehicle, even in a blizzard of several days duration. Wrap the blanket around the body; light the lantern and place it between the feet.

b. First-aid measures.—(1) Remove the cause. If a stove is burning or if a motor is running, turn it off.

(2) Get outdoors or move the overcome person outdoors.

(3) For persons who cannot get outdoors, secure proper ventilation immediately and keep them quiet.

(4) Breathe evenly, and do not move about.

(5) If a person has been overcome by carbon monoxide and is not breathing, give artificial respiration as described in paragraph 37.

(6) Once outside, to prevent freezing, it is important to cover with blankets or get into a sleeping bag.

■ 58. TRENCH FOOT; SHELTER FOOT; IMMERSION FOOT.—These three conditions are practically the same and are very much like mild frostbite. They may occur, however, at much higher temperatures and usually result from standing still or sitting for long periods in a wet trench or shelter, or from hanging of the feet for a long time in water after ship wreck. Tight leggings and cramped positions of the legs increase the liability of the occurrence of these several conditions. They are best prevented by keeping the feet as dry as possible, and by frequently exercising the legs to increase the flow of blood. First-aid measures are the same as those for frostbite (par. 54c).

SECTION VII

MEASURES FOR USE IN THE JUNGLE AND TROPICS

■ 59. MALARIA.—*a.* Malaria is caused by the bite of certain mosquitoes which feed chiefly at night. For this reason, when in a mosquito infested country, sleep under a mosquito net. When out of doors at night protect yourself with leggings, a head net and gloves, and by rolling down the sleeves. Insect repellent furnished in jungle first-aid kits will help keep mosquitoes and other insects away. To apply insect repellent, turn bottle upside down and spread a small amount of liquid over exposed skin surfaces. One application will usually keep insects away for 2 hours.

b. When in a place where there is malaria, atabrine will be taken for protection against the severe symptoms of malaria. Take the first dose (one tablet) in the morning, and the second dose (one tablet) in the evening, after meals, on 2 days of each week, skipping 2 or 3 days between the days of taking atabrine. Start taking atabrine on the first day spent in a malarial area and continue to take it as long as in the area.

c. If quinine is in the jungle kit instead of atabrine, take two quinine tablets each day, as long as in a malarial area.

■ 60. DYSENTERY.—Dysentery is caused by impure drinking water or food, and is very likely to occur in the jungle unless certain precautions are taken.

a. Prevention.—Dysentery may be avoided by purifying all drinking water in one of the ways described in paragraph 45, and by eating only food which has just been cooked or taken from a sealed container.

b. First-aid measures.—(1) If ill with dysentery, take only liquid foods and stay as quiet as possible until well. Add two salt tablets to each canteenful of drinking water if having an attack of dysentery.

(2) In some of the first-aid kits there are sulfaguanadine tablets for the treatment of dysentery. Take four tablets every 4 hours, day and night, until the bowel movements are normal. If there is no improvement in 4 days, stop taking the tablets.

■ 61. SALT AND WATER REQUIREMENTS.—The heat of tropical areas requires that special attention be paid to the amount of water and salt taken each day. The methods of preventing the bad effects of heat and sweating, and the habits which should be formed when in a hot climate are described in paragraph 51. If the suggestions given are followed, heat stroke, heat exhaustion, or heat cramps will be less likely to develop.

■ 62. POISONED BITES AND WOUNDS.—First-aid measures for snake and spider bites are given in paragraphs 29 and 30; those for poison weapon wounds are given in paragraph 48.

SECTION VIII

MEASURES FOR USE IN AIRCRAFT AND TANK INJURIES

■ 63. FIRST AID FOR PERSONS INJURED IN AIRCRAFT.—In general, the same first-aid principles and measures apply to aircraft crew members and persons on the ground. Bombing missions are usually several hours in duration, and this makes it necessary that any immediate first aid must be given by a member of the combat crew while the airplane is in flight. All aircraft carry one aeronautical first-aid kit for each station in the aircraft (par. 75). In addition, crews of combat air-

planes often carry additional dressings, triangular bandages, and improvised splints, as may be advised by the unit surgeon. The jungle first-aid kit (par. 76), and the Arctic first-aid kit (par. 78), which are specially designed for use in tropical and arctic areas, are carried in airplanes going over these regions. The parachute kit, which is attached to the parachute harness, is a small first-aid kit to be used after a parachute landing (par. 74).

a. Oxygen supply.—When flying at high altitudes, the person going to the aid of an injured crew member must first be sure that his own portable oxygen equipment is functioning; there may be a bullet hole in the "walk-around" oxygen bottle. Upon reaching the injured crew member, first be sure that his oxygen supply has not been cut off. If oxygen is not available death may come within a few seconds or within 2 or 3 minutes, depending upon the altitude. If the injured person is suffering from shock or hemorrhage, special attention should be given to the oxygen supply even at low altitudes; if a dilution-demand system is being employed, it may be necessary to shift to "auto-mix-off" at relatively low altitudes. If the oxygen supply of the injured person is damaged, a new supply must be provided, either from a walk-around bottle or by a new connection into the oxygen supply system. The injured person may be moved to a new location, where he can be fitted with a new oxygen mask; if this cannot be done, the airplane must drop to a lower level. If the injured person is unconscious, an open stream of oxygen may be played upon his face and artificial respiration given in order to revive him before moving. Wounded crew members are frequently flown directly to the nearest hospital after completion of the mission.

b. Air sickness.—Air sickness is particularly likely to follow injury. The development of air sickness will add to the discomfort of a wounded air crew member and may constitute a serious hazard. It may produce vomiting which will often interfere with or entirely prevent the use of oxygen equipment. It is, therefore, important to take precautions to prevent air sickness. To do this, the person should be placed as near as possible to the center of gravity of the airplane. If the air is rough, he should be fastened securely to prevent rolling and tossing. If possible, he should be

placed so that he can see outside the ship. All available measures should be taken to keep the person warm; hot drinks should be given and he should be well covered. As much ventilation as is consistent with warmth should be maintained. Leaning the head forward and keeping it in a fixed position in relation to the aircraft during turns and maneuvers is helpful.

c. Removal of wounded and injured from airplanes.—(1) It is usually not difficult to remove an injured person from a nondisabled airplane. If the airplane is large enough and a litter is available, the person should be placed on it inside the airplane. Before this is done, however, make sure that the door is wide enough for the litter to be brought out flat. A parachute harness frequently can be used as a convenient means of support, if it is impossible to use a litter in removing a person from the airplane, as the straps of the harness furnish excellent hand holds. If several persons are present, one person should be responsible for supporting any injured limb, while the others take care of lifting the injured person from the airplane.

(2) In the event of an airplane crash, remove the injured person from the crashed or wrecked airplane with the greatest possible speed and the least possible injury and suffering to the injured person, regardless of the damage that may result to the airplane in the process. Whether the injury is due to a crash or to enemy gunfire, careful planning of removal is necessary in order to avoid additional injury. If there is no fire hazard, it is advisable to apply first aid before attempting removal, especially the use of splints and measures for the relief of pain, including morphine if necessary.

(3) The fear of fire frequently has resulted in persons being removed with unnecessary haste and lack of care. If fire is to result from the crash, it usually will start before the aircraft can be reached or within a period of about 5 minutes. If fire appears probable, all efforts should be directed toward immediate removal of the injured. The presence of live ammunition and bombs will influence the speed of the action and determine whether drastic measures must be undertaken.

(4) It is well to direct the fire extinguisher on any danger area where fire is likely to break out. All members of the

airplane crew and of the crash crew should be familiar with the operation and use of carbon dioxide and other fire extinguishers. Because of the danger of igniting spilled gasoline, cigarettes, exposed lights, matches, or other open fire should not be allowed near damaged aircraft under any circumstances.

(5) To remove an injured man from a cockpit type airplane, arrange the available men two on one side of the cockpit and any others on the opposite side. Make certain that each man has a firm footing either on the wing, on boxes, on the back end of the ambulance or truck, or on some other solid support. Be certain that the safety belt, which holds the man in his seat, has been unfastened, as failure to do this may result in very serious injury. Be sure that no part of the injured person or persons is trapped or caught by some portion of the airplane. If the injured is so trapped, that portion of the airplane resting against the body must be cut away with an ax, shears, or a hacksaw.

(6) If the airplane has been crushed so that the wounded person cannot be immediately released, give such first aid as can be given in the airplane, make him as comfortable as possible, and then take steps to release him. Be sure to place some protection between the injured person and the structures that are to be cut by torch, ax, or other cutting tools, in order to avoid additional injury. Be sure that the injured person is supported so that he does not fall and sustain further injury when the part of the airplane pinning him is removed. This is especially applicable when the plane has ground-looped and the crew member is suspended by his safety belt.

■ 64. FIRST AID FOR PERSONS INJURED IN TANKS.—First-aid measures for persons injured in tanks must often be given very hurriedly, or delayed until removal of the person from the tank has been accomplished. Whenever the situation permits, tank casualties who are suffering much pain should be given an injection of morphine, should be kept warm, and should be moved as little as possible, evacuation being accomplished at the rallying point. If practicable, wounds should be dressed and simple splinting such as tying an injured leg to the uninjured leg, should be done before

evacuation from the vehicle. When there are severe injuries which will cause the person to suffer much pain during his removal from the tank, an injection of morphine should be given before he is removed, unless morphine has been given within the last 2 hours (see par. 10). Removal can be accomplished either with or without the aid of belt straps, slings, harness, or other special equipment, always being very careful to avoid causing further injury during evacuation.

SECTION IX

TRANSPORTATION OF THE SICK AND INJURED

■ 65. GENERAL.—Correct transportation of a seriously injured person is one of the most important parts of first aid. Careless or rough handling can increase the seriousness of an injury and may even cause death. Whenever possible, give whatever first aid is needed before moving an injured person. If there is no absolute need for moving him at once, it is usually best to let him stay where he is until he can be moved by litter, ambulance, or some other means. Unless he is already overheated, an injured person should be kept warm both while waiting to be moved and during transportation.

■ 66. WITHOUT LITTERS.—Sometimes situations require transportation without litters or other equipment. If this should be necessary it can be done by one or another of several ways.

a. Movement by one bearer.—Movement of an injured person by a single bearer may be done by the fireman's carry (figs. 51 to 57, incl.), supporting carry (fig. 58), arms carry (fig. 59), saddle-back carry (fig. 60), pack-strap carry (fig. 61) or fireman's drag (fig. 62). The first three steps of the fireman's carry, illustrated in figures 51, 52, and 53 are also preliminary steps to the accomplishment of other carries listed in this paragraph with the exception of the fireman's drag.

b. Movement by two bearers.—Movement of an injured person by two bearers may be done by the supporting carry (fig. 63), arms carry (fig. 64), saddle-back carry (fig. 65), or pack-saddle carry (figs. 66 and 67).

FIGURE 51.—Fireman's carry—first step.

FIGURE 52.—Fireman's carry—second step.

FIGURE 53.—Fireman's carry—third step.

FIGURE 54.—Fireman's carry—fourth step.

FIGURE 55.—Fireman's carry—fifth step.

FIGURE 56.—Fireman's carry—sixth step.

FIGURE 57.—Fireman's carry—final step.

FIGURE 58.—Supporting carry—one bearer.

FIGURE 59.—Arms carry—one bearer.

FIGURE 60.—Saddle-back carry—one bearer.

FIGURE 61.—Pack-strap carry.

FIGURE 62.—Fireman's drag.

FIGURE 63.—Supporting carry—two bearers.

FIGURE 64.—Arms carry—two bearers.

FIGURE 65.—Saddle-back carry—two bearers.

FIGURE 66.—Pack-saddle carry.

FIGURE 67.—Pack-saddle carry—close-up.

■ 67. WITH IMPROVISED LITTERS.—*a.* Many objects and materials may be used to make improvised litters in an emergency.

b. The usual way to make a litter is with a blanket or shelter tent, and poles about 7 feet long, as shown in figures 68, 69, and 70.

(1) The blanket is spread on the ground.

(2) One pole is laid across the center of the blanket which is then folded over it.

(3) The second pole is placed across the center of the new fold.

(4) The blanket is folded over the second pole as over the first.

(5) The free end of the blanket is fixed.

c. A litter can be prepared by turning two or three blouses inside out and buttoning them up, sleeves in, then passing

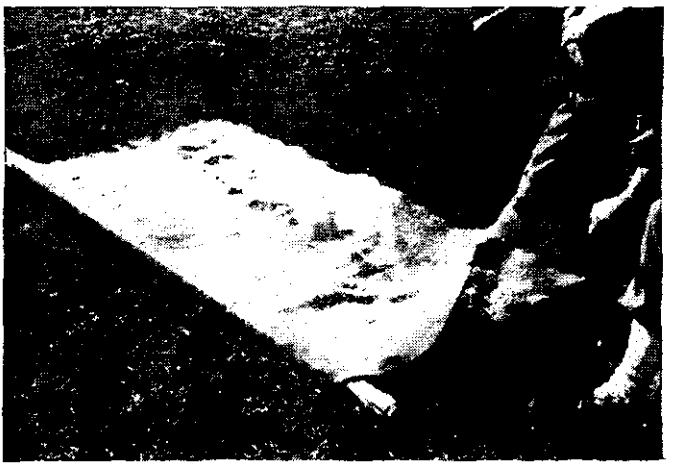

FIGURE 68.—Litter being made with poles and blanket—intermediate step.

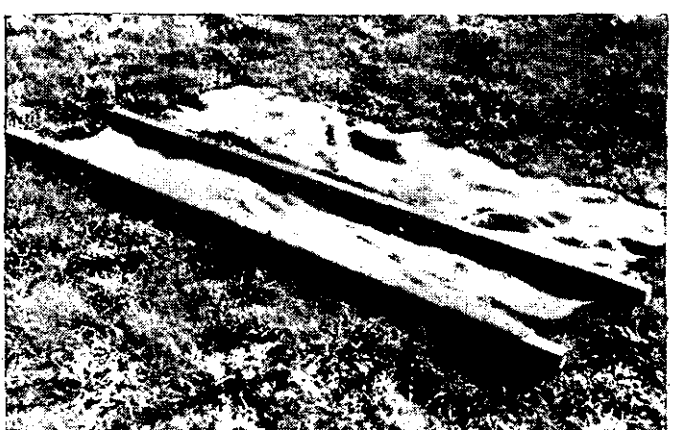

FIGURE 69.—Litter being made with poles and blanket—intermediate step.

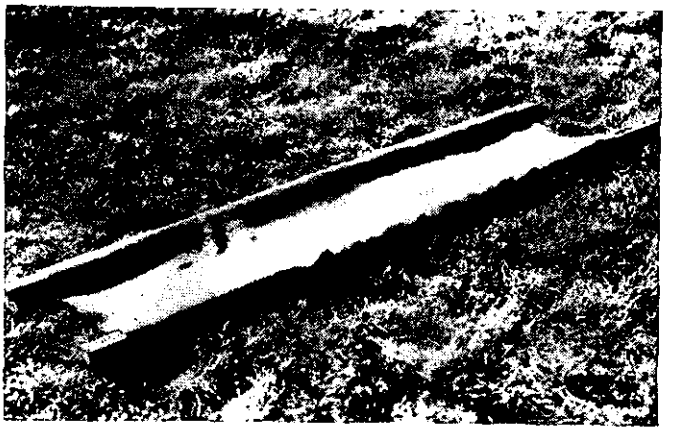

FIGURE 70.—Litter made with poles and blankets—completed.

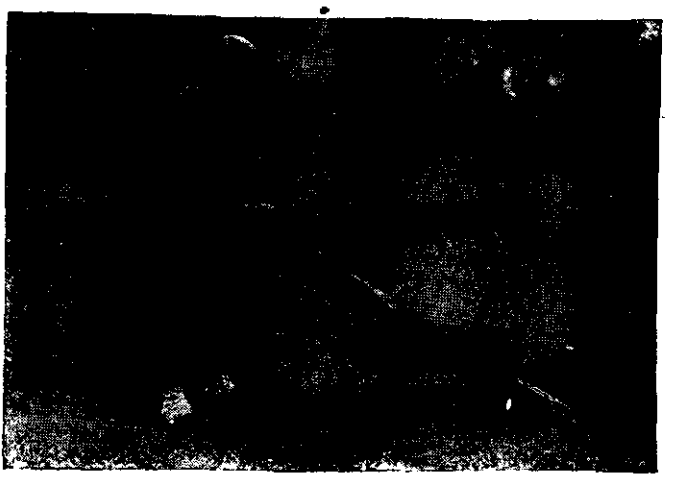

FIGURE 71.—Litter made with poles and coats.

poles through the sleeves, the backs of the blouses forming the bed, as shown in figure 71.

d. Camp cots, window shutters, doors, benches, ladders, boards, or poles, tied together and preferably padded, serve well as litters.

e. Litters can be made by ripping the bottoms or cutting off the corners of sacks, bags, or bedticks, then passing two poles through them and tying crosspieces to the poles to keep them apart.

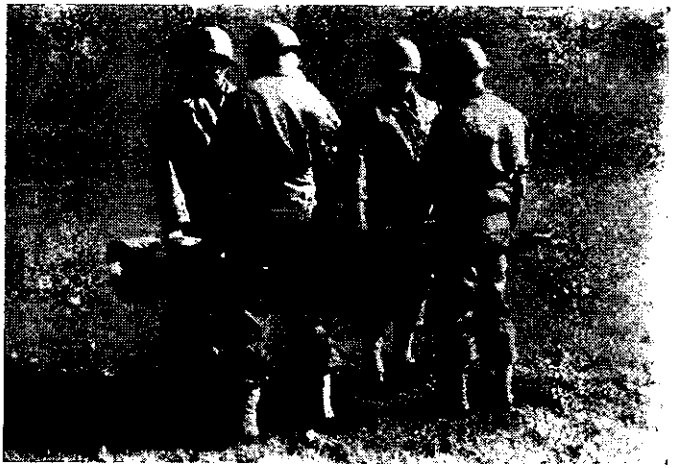

FIGURE 72.—Rolled blanket used as a litter.

f. A shelter half, a blanket, a piece of matting, or a piece of carpet can be fastened to poles by tacks or twine to make a litter.

g. Rope or wire can be woven between poles and this network covered with a blanket.

h. If no poles can be had, a blanket, rolled from two sides and supported as shown in figure 72, can be used as a litter.

i. In snow country, sleds will serve as a litter; if a regular sled is not available, skis can be fastened together to serve the same purpose.

SECTION X

WAR GASES

■ 68. GENERAL.—*a.* The combat soldier, even if in an isolated area, can either protect himself against gas attack or give himself first aid for gas exposure with the following equipment:

(1) A gas mask.

(2) Protective clothing.

(3) Protective ointment M–4, with its cellulose paper packing.

(4) A piece of ordinary soap.

(5) A canteenful of water.

(6) A handkerchief for wetting burning phosphorous particles.

(7) A knife for cutting away contaminated clothing or scraping phosphorous particles from burns.

b. For those soldiers who may be called upon to use more elaborate gas casualty equipment, a list of the contents of the special gas casualty first-aid kit is given in paragraph 79. Directions for the use of the contents of this kit are given in paragraphs 85, 94, 96, 97, 99, 101, 106, 112, and 113.

■ 69. PROTECTIVE AND FIRST-AID MEASURES.—*a. Gas mask.*—A gas mask gives protection for the eyes, the breathing passages, and that part of the face covered by the mask. A gas mask should be worn whenever a person is exposed to any war gas.

b. Vesicant agents.—(1) Protective clothing will protect the skin against the vapors and small droplets of vesicant agents.

(2) Protective ointment M–4 will prevent blistering if used within *1 or 2 minutes* after contamination of the skin with liquid mustard or lewisite. Protective ointment is to be used as follows, if a part of the body becomes contaminated with a vesicant agent in liquid form:

(*a*) Use quickly, within 1 to 2 minutes from the time of exposure. If redness has already developed, do not use protective ointment because at this stage protective ointment

is harmful, and thorough washing with water or, better still, soap and water, is the best thing to do.

(*b*) Tear off small pieces of the cellulose packing material used to wrap the tube of ointment, and blot dry (dab, do not rub) any liquid vesicant agent which may be on the skin. Use a fresh piece of the packing material for each dabbing to avoid spreading the chemical agent.

(*c*) Unscrew the cap of the tube, reverse it, and use it to punch a hole in the seal of the tube. Squeeze some ointment on a piece of the packing material and rub the ointment into the contaminated area for about 20 seconds.

(*d*) Use a clean piece of packing material to wipe off any ointment which is left on the skin. Repeat this procedure, using fresh amounts of ointment two or three times, wiping off the extra ointment before each new application.

(*e*) After 10 to 20 minutes, wash away any remaining ointment, using soap and water if possible.

(3) Any vesicant agent which gets into the eye must be washed away at once with large amounts of water. The cap of a canteen can be used as an eye cup, but in addition the upper eyelids should be lifted and flushed well with water. Flushing of the eye within the first minute or two after exposure is worth weeks of treatment later.

(4) Ordinary clothing contaminated with vesicant agents should be removed as early as possible. Protective clothing need be removed only if it is contaminated with large drops or splashes of vesicant agents.

c. White phosphorous.—Burning pieces of phosphorous on the clothing or skin are to be smothered with a wet handkerchief, and the phosphorous cut from the clothing or scraped from the skin.

d. Tear gas (lacrimators).—(1) Put on the mask. Squeeze the outlet valve with the fingers and breathe out forcibly one or two times to clear the facepiece of gas. Then keep the eyes open as much as possible. The flow of tears and the purified air will quickly rid the eyes of the irritating gas.

(2) Liquid tear gas should be washed out of the eye with water, or from the skin with soap and water. The clothing must be aired or washed before being worn again.

e. Irritating smoke (sternutators).—(1) Put on the gas mask as soon as gas is detected, and keep it on continuously

unless it must be lifted away just long enough to vomit. Although there may be many disagreeable symptoms, including headache, nausea and vomiting, sneezing, and a burning sensation in the nose and throat, the effects of this gas are not really dangerous.

(2) When the situation permits, rinse nose, throat, and eyes with water, and rest in the shade until the worst symptoms have passed. Recovery is usually rapid after an hour or so. Air the clothing, and if any part of the skin feels irritated, wash it with soap and water.

f. Lung irritants.—The immediate use of the gas mask is of great importance in protection against these gases. If not enough gas has been breathed in to cause any noticeable effects, it will do no harm to carry on with the mission. If tightness in the chest, coughing, or easy exhaustion appear, absolute rest, warmth and evacuation for medical treatment are necessary. Smoking of tobacco in any form after exposure to this gas is very dangerous and must be avoided.

SECTION XI

DESCRIPTION OF FIRST-AID KITS AND PACKETS

■ 70. GENERAL.—In this section various first-aid kits or packets and their contents are described. Some are supplied to the individual soldier; others are made available to certain groups of the armed forces, by being placed in vehicles or airplanes. First-aid kits and packets vary in their contents according to the requirements of the troops to whom they are supplied.

■ 71. INDIVIDUAL EQUIPMENT.—*a.* First-aid packet, carried in web pouch attached to cartridge belt (figs. 73 and 74), contains—

(1) Wound dressing (1).

(2) Sulfanilamide (5 grams) in sterile, individual, double-wrapped shaker-top envelope (1).

b. Sulfadiazine (or sulfanilamide) packet, carried in web pouch attached to cartridge belt (figs. 75 and 76), contains 8 sulfadiazine tablets (0.5 gram each), or 12 sulfanilamide tablets (0.5 gram each).

FIGURE 73.—First-aid packet—outside view.

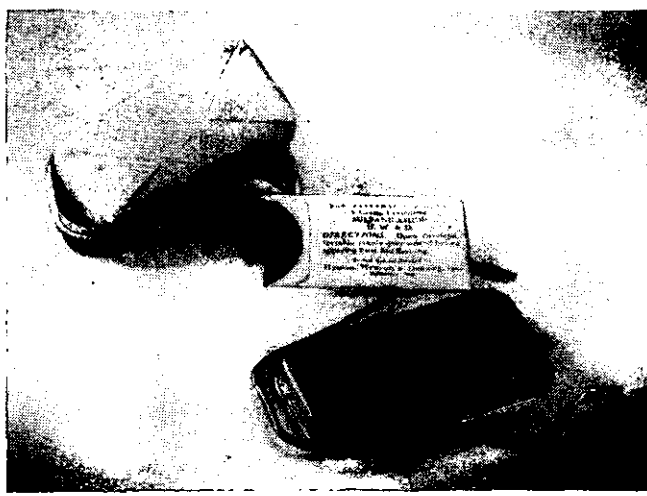

FIGURE 74.—First-aid packet—opened.

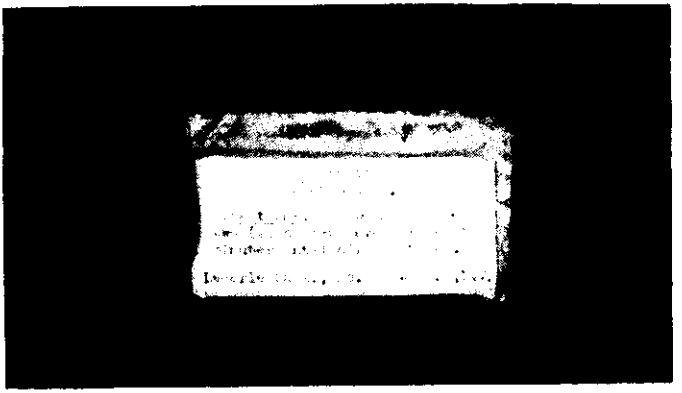

FIGURE 75.—Sulfadiazine packet—outside view.

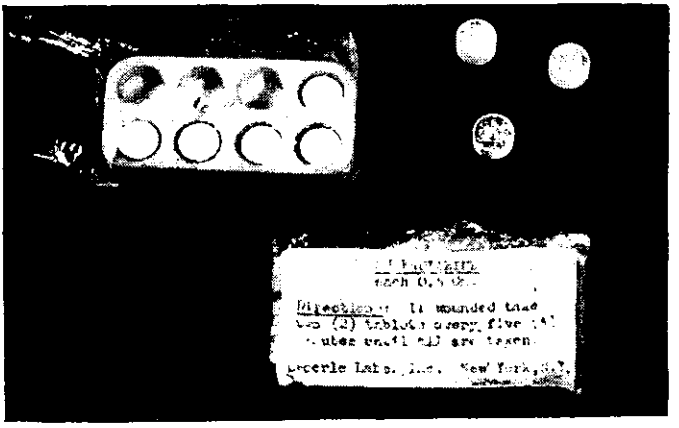

FIGURE 76.—Sulfadiazine packet—opened.

c. Protective ointment (M–4) packet carried in gas mask carrier (fig. 77) contains—

(1) Tube of protective ointment M–4.

(2) Cellulose packing material.

FIGURE 77.—Protective ointment M–4 and cellulose packing material.

■ 72. MOTOR VEHICLE FIRST-AID KIT (12-UNIT) (figs. 78, 79).— This kit, supplied to motor vehicles, usually one to every fourth vehicle, contains—

a. Burn injury set (boric acid ointment or 5 percent sulfadiazine ointment and wooden applicator) (2).

b. Eye dressing set (1), consisting of—

(1) Two-inch eye pads.

(2) Double strip adhesive plaster packets.

(3) Tube of boric acid ointment.

(4) Tube of butyn sulfate and metaphen ophthalmic ointment.

c. Iodine swabs (1 package).

d. Sulfanilamide (5 grams) in sterile individual double wrapped envelope with shaker top (6).

e. Adhesive compresses, 1 by 3 inches (16).

f. Bandage compress, 4 by 4 inches (1).

FIGURE 78.—Motor vehicle first-aid kit (12-unit)—outside view.

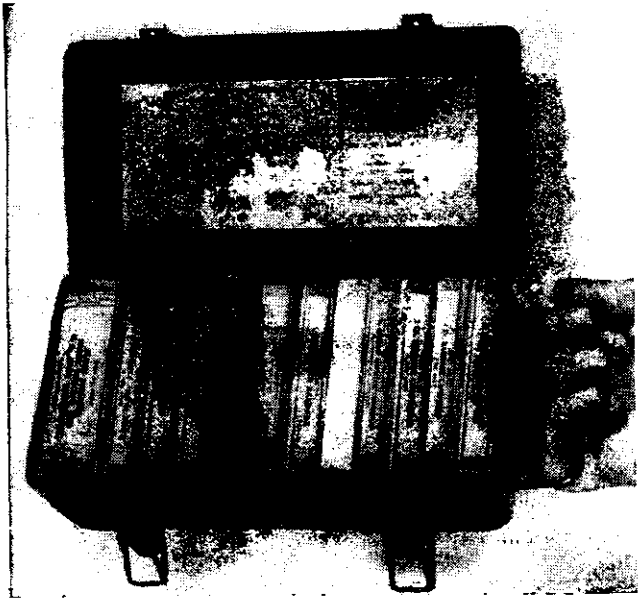

FIGURE 79.—Motor vehicle first-aid kit (12-unit)—opened.

g. Bandage compress, 2 by 2 inches (1).
h. Gauze bandage, 4 inches by 6 yards (1).
i. Triangular bandage (1).
j. Tourniquet-scissors-forceps set (1).
k. Ammonia inhalants (10).
l. Safetypins (10).
m. Morphine tartrate syrettes (½ grain) (may be added to this kit upon direction of the commanding officer when the military circumstances indicate its need).

■ **73. Motor Vehicle First-Aid Kit (24 Unit) (figs. 80 and 81).**—This kit, supplied to motor vehicles, usually one to every armored vehicle, including half-track vehicles, contains—

a. Burn injury set (boric acid ointment or 5 percent sulfadiazine ointment and wooden applicator) (4).
b. Eye dressing set (2), consisting of—
(1) Two-inch eye pads.

Figure 80.—Motor vehicle first-aid kit (24-unit)—outside view.

(2) Double strip adhesive plaster packets.

(3) Tube of boric acid ointment.

(4) Tube of butyn sulfate and metaphen ophthalmic ointment.

c. Iodine swabs (1 package).

d. Sulfanilamide (5 grams) in sterile individual double wrapped envelope with shaker top (12).

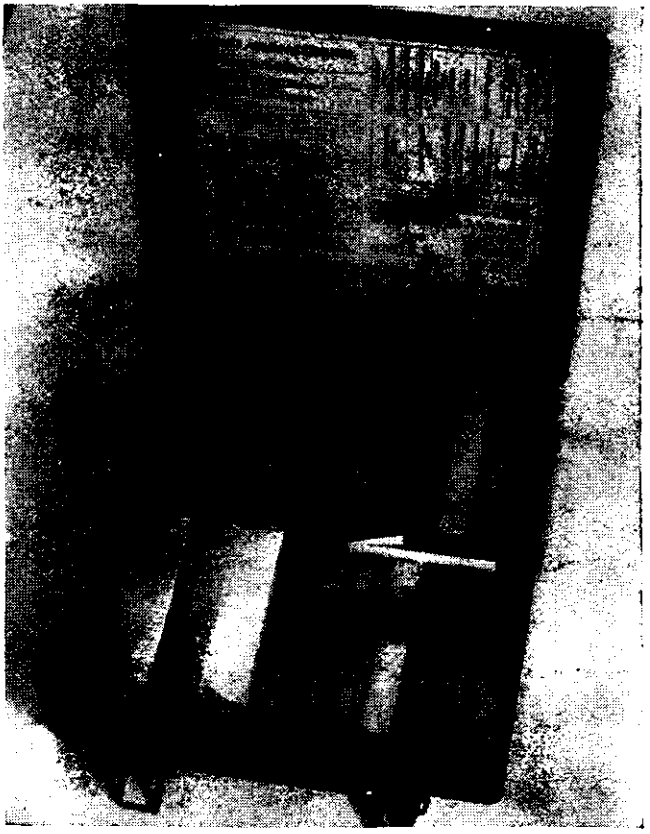

FIGURE 81.—Motor vehicle first-aid kit (24-unit)—opened.

e. Adhesive compresses, 1 by 3 inches (16).
f. Bandage compress, 4 by 4 inches (3).
g. Bandage compress, 2 by 2 inches (2).
h. Gauze bandage, 4 inches by 6 yards (1).
i. Triangular bandage (1).
j. Tourniquet-scissors-forceps set (1).
k. Ammonia inhalants (10).
l. Safetypins (10).
m. Large wound dressing (2).
n. Morphine tartrate syrette (½ grain) (may be added to this kit upon direction of the commanding officer when the military circumstances indicate its need).

■ 74. PARACHUTE FIRST-AID PACKET (figs. 82 and 83).—This packet, supplied to each parachute wearer, contains—
a. Tourniquet (1).
b. Wound dressing (1).
c. Morphine tartrate syrette (½-grain) (1).

■ 75. AERONAUTIC FIRST-AID KIT (figs. 84 and 85).—This kit, supplied to aircraft, one to each aircraft station, contains—
a. Scissors (1).
b. Wound dressings (3).
c. Burn injury set (boric acid ointment or 5 percent sulfadiazine ointment and wooden applicator) (1).
d. Eye dressing set (1), consisting of—
(1) Two-inch eye pads.
(2) Double strip adhesive plaster packets.
(3) Tube of boric acid ointment.
(4) Tube of butyn sulfate and metaphen ophthalmic ointment.
e. Halazone (water purification) tablets (1/16-grain) (100).
f. Sulfadiazine tablets (0.5-gram) (8).
g. Morphine tartrate syrettes (½-grain) (2).
h. Sulfanilamide (5 grams) in sterile individual double wrapped envelope with shaker top (6).
i. Tourniquet (1).
j. Iodine swabs (1 package).
k. Adhesive compresses (16).

■ 76. JUNGLE FIRST-AID KIT (LARGE) (figs. 86 and 87).—This kit, supplied to aircraft going over jungle areas, contains—

FIGURE 82.—Parachute first-aid packet—outside view.

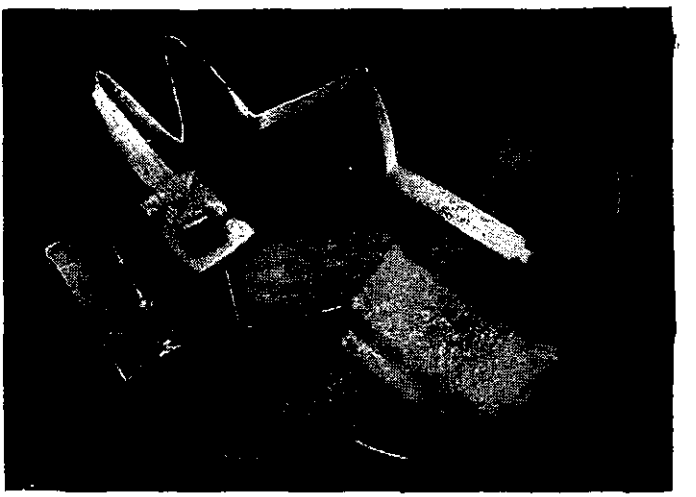

FIGURE 83.—Parachute first-aid packet—contents.

a. Aspirin (acid, acetylsalicylic) tablets (5-grain) (150).
b. Aloin compound tablets (200).
c. Atabrine tablets (0.1-gram) (100).
d. Sodium bicarbonate and peppermint tablets (2 containers of 200 each).
e. Halazone (water purification) tablets (1/16-grain) (200).
f. Insect repellent (12 bottles, 2½ oz. each).
g. Suction kit for snake bite (1).
h. Iodine swabs (4 packages of 10 swabs).
i. Salt tablets (10-grain) (100).

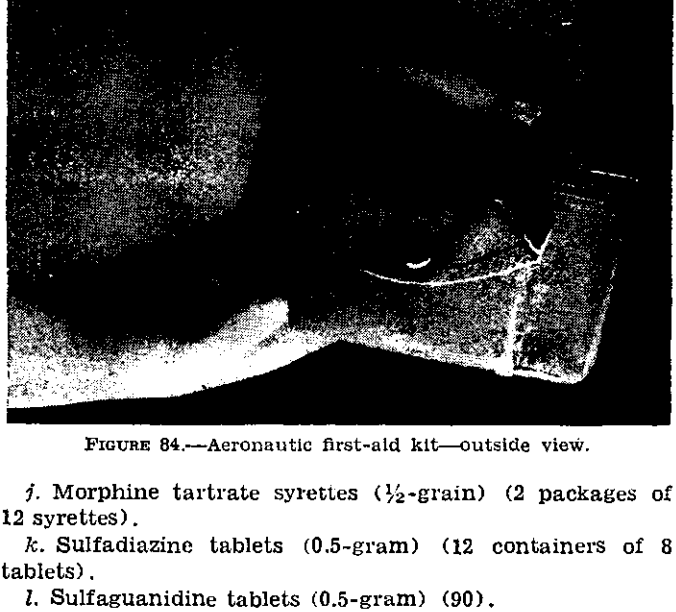

FIGURE 84.—Aeronautic first-aid kit—outside view.

j. Morphine tartrate syrettes (½-grain) (2 packages of 12 syrettes).
k. Sulfadiazine tablets (0.5-gram) (12 containers of 8 tablets).
l. Sulfaguanidine tablets (0.5-gram) (90).
m. Adhesive compresses (5 packages of 16 each).

■ 77. JUNGLE FIRST-AID KIT (INDIVIDUAL) (figs. 88 and 89).—This kit supplied to each soldier in jungle areas and carried

in a compartment of the jungle pack (waterproof rucksack), contains—

a. Aspirin (acid, acetylsalicylic) tablets (5-grain) (24).
b. Atabrine tablets (0.1-gram) (30).
c. Halazone (water purification) tablets (1/16-grain) (200).
d. Insect repellent (1 oz.).
e. Packet, first-aid (1).
f. Foot powder (2 oz.).

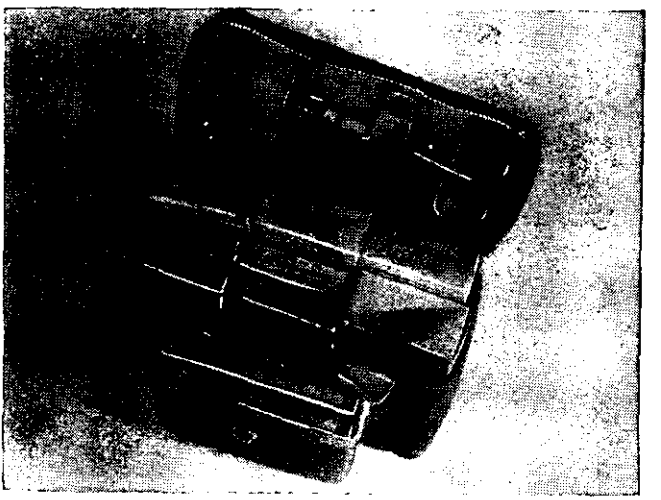

FIGURE 85.—Aeronautic first-aid kit—opened.

g. Solution for athlete's foot (Frazer's solution) (1 oz.).
h. Iodine (2%) (2 cc).
i. Salt tablets (10-grain) (100).
j. Sulfadiazine tablets (0.5-grain) (8).
k. Adhesive compresses (16).
l. Adhesive plaster (1 inch × 5 yards) (1 spool).

■ 78. ARCTIC FIRST-AID KIT (figs. 90 and 91).—This kit, supplied to aircraft going over Arctic areas, contains—

a. Aspirin (acid, acetylsalicylic) tablets (5-grain) (150).

FIGURE 86.—Jungle first-aid kit—outside view.

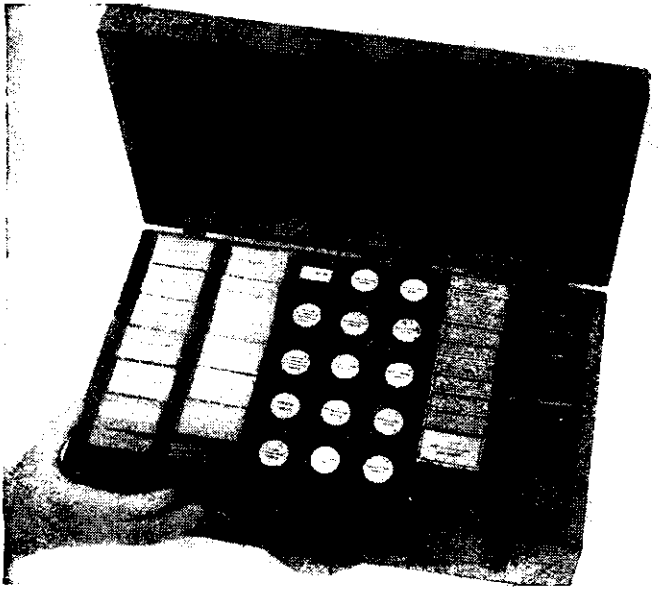

FIGURE 87.—Jungle first-aid kit—opened.

b. Aloin compound tablets (200).
c. Sodium bicarbonate and peppermint tablets (200).
d. Halazone (water purification) tablets (1/16-grain) (200).
e. Vitamins (multivitamin capsules or tablets) (300).

FIGURE 88.—Jungle first-aid kit (individual)—rolled, in a bag.

f. Boric acid ointment (1 oz.).
g. Bismuth subcarbonate tablets (5-grain) (200).
h. Ammoniated mercury ointment, U. S. P. (1 oz.).
i. Silver protein, mild, tablets (4 9/10 grains) (100).
j. Sulfadiazine tablets (0.5-gram) (96).

k. Sulfaguaniadine tablets (0.5 gram) (90).
l. Foille (¾-oz. tubes) (6).
m. Cotton, absorbent, compressed (1 oz.).
n. Iodine swabs (20).
o. Morphine tartrate syrettes (½-grain) (24).
p. Sulfanilamide (5 grams) in sterile individual double wrapped envelope with shaker top (12).
q. Adhesive compresses (32).
r. Adhesive plaster (1 inch x 5 yards) (1 spool).
s. Salt tablets (10-grain) (100).
t. Bandage, gauze (4-inch) (9).

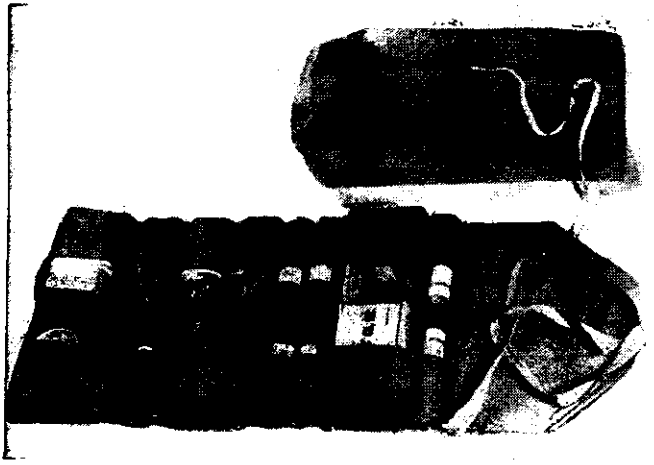

FIGURE 89.—Jungle first-aid kit (individual)—opened.

■ 79. GAS CASUALTY FIRST-AID KIT (figs. 92 and 93).—This kit, supplied in the theater of operations on the basis of one to each 25 individuals, and usually carried in vehicles, contains—

a. Dichloramine-T in triacetin.
b. Hydrogen peroxide solution (8%).
c. Copper sulfate solution (10%).
d. Eye and nose drops.
e. Eye solution M–1.

FIGURE 90.—Arctic first-aid kit—outside view.

FIGURE 91.—Arctic first-aid kit—opened.

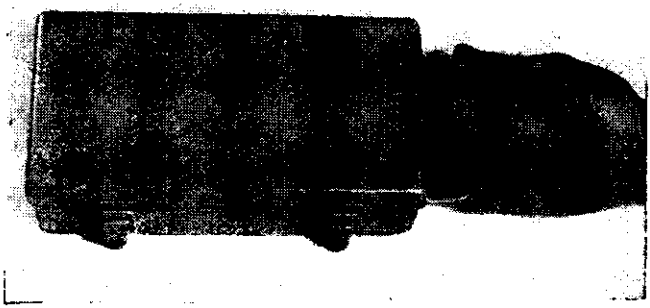

FIGURE 92.—Gas casualty first-aid kit—outside view.

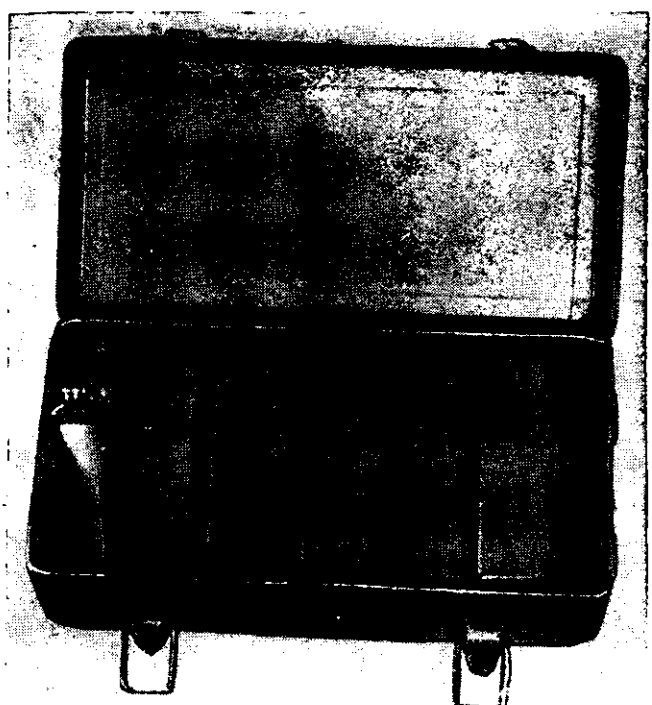

FIGURE 93.—Gas casualty first-aid kit—opened.

f. Cotton pads.
g. Amyl nitrite.
h. Pontocaine compound ointment.
i. Protective ointment M–4.

■ 80. PARACHUTE FIRST-AID KIT (FRYING PAN INSERT), TYPE B–4 (figs. 94 and 95).—This kit is found in emergency jungle kit attached to seat of parachute, and issued one per parachute in tropical countries.

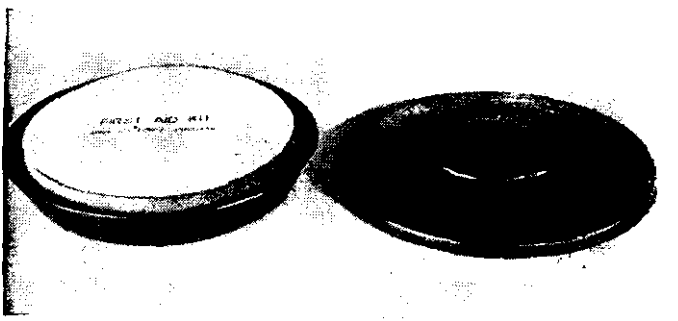

FIGURE 94.—Parachute first-aid kit (frying pan insert), Type B–4.

a. Medical components.
(1) Atabrine tablets (0.1-gram) (12).
(2) Iodine swabs (6).
(3) Sulfanilamide (5 grams) in sterile individual double-wrapped envelope with shaker top (1).
(4) Salt tablets (10-grain) (8).
(5) Water purification (Halazone) tablets (1/16-grain) (30).
(6) Bandage gauze compress 2 by 2 inches (2).
(7) Adhesive compress (6).
(8) Boric acid ointment (1).
(9) Sulfadiazine tablets (0.5-gram) (8).
(10) Benzedrine tablets (5-mgm) (6).
b. In addition to medical components the following items are also contained in this kit:
(1) Curved needle with thread (1).
(2) Soap, cake, hotel size (1).
(3) Tea, tablets, compressed (10).

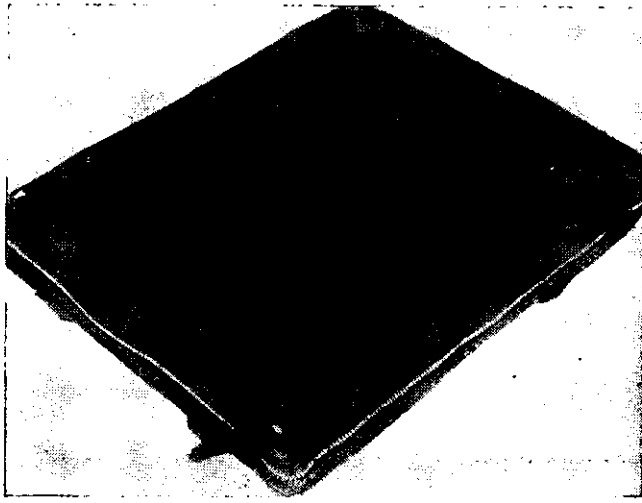

FIGURE 95.—Emergency jungle kit, containing parachute first-aid kit (frying pan insert).

SECTION XII

USES OF CONTENTS OF FIRST-AID KITS AND PACKETS

■ 81. GENERAL.—The uses of the materials and pieces of equipment contained in one or another of the first-aid kits or packets which a soldier may be called upon to use in an emergency are given in the succeeding paragraphs.

■ 82. ALOIN COMPOUND TABLETS.—As a laxative. Take one or two tablets at night, if constipated.

■ 83. AMMONIA, AROMATIC, INHALANT.—For fainting, crush and hold near nose as directed on container.

■ 84. AMMONIATED MERCURY OINTMENT (MERCURIC OINTMENT, AMMONIATED).—For mild skin infections. Spread thinly over affected areas. *Caution:* Do not apply if iodine has already been used.

■ 85. AMYL NITRITE.—For use after exposure to hydrocyanic acid gas (HCN). Break container in piece of cloth and inhale fumes. Repeat three times if necessary.

■ 86. ASPIRIN (ACID ACETYLSALICYLIC) TABLETS (5-GRAIN).—For slight aches or pain. Take one to two tablets repeating not oftener than every 3 hours, as needed. Do not take more than 12 tablets in 24 hours.

■ 87. ATABRINE TABLETS (0.1-GRAM).—For prevention of symptoms of malaria. Take first dose (one tablet) in morning and second dose (one tablet) in evening, after meals, on 2 days of each week; skip 2 or 3 days between the days of taking atabrine. Start to take atabrine on the first day spent in a malarial area and continue to take it as long as located in the area.

■ 88. BANDAGES AND DRESSINGS.—*a. Wound dressing (dressing, first-aid, Carlisle, small).*—For dressing medium sized wounds.

b. Wound dressing, large (dressing, first-aid, Carlisle, large.)—For dressing large wounds.

c. Bandage, gauze compress 4 by 4 inches.—For dressing small wounds.

d. Bandage, gauze compress 2 by 2 inches.—For dressing small wounds.

e. Adhesive compress (bandage, gauze, adhesive).—For quick dressing of small cuts, scratches, or blisters.

f. Bandage, triangular.—For making slings and for bandaging wounds or injuries requiring a large dressing. It can also be used as a tourniquet and for holding splints in place.

g. Eye dressing.—For dressing eye wounds, or an eye with a foreign body in it.

h. Bandage, gauze, 4 inches by 6 yards.—For holding dressings or splints in place.

■ 89. BENZEDRINE TABLETS (5-MGM)—For relief of *extreme mental fatigue* take one tablet. This dose may be repeated at intervals of every 6 hours, if needed. A total of only three such doses should be taken in 1 week except under operations of extreme length when up to six such doses may be used. For the relief of *physical fatigue*, take two tablets. This dose may be repeated at intervals of every 6 hours, if needed. Never take a total of more than three such doses within a period of 1 week.

■ 90. BISMUTH SUBCARBONATE TABLETS (5-GRAIN).—For severe diarrhea. Take 4 to 6 tablets, three to four times daily until diarrhea stops.

■ 91. BORIC ACID OINTMENT (ACID, BORIC, OINTMENT).—For burns, windburn, and chafing. Spread thinly over affected area.

■ 92. BURN, INJURY SET (SULFADIAZINE OINTMENT (5%); OR BORIC ACID OINTMENT; WOODEN APPLICATOR).—Use wooden applicator to spread ointment evenly over burned surfaces or onto dressing which is to be applied to these surfaces.

■ 93. COMPRESSES.—See paragraph 88.

■ 94. COPPER SULFATE SOLUTION (10%).—For phosphorus burns. Cover burns with cotton pads wet with copper sulphate solution. Then remove coated phosphorus particles with forceps. *Caution: Do not use in eyes.*

■ 95. COTTON, ABSORBENT, COMPRESSED.—For plugging ear canals to protect against cold and wind, also as protection for eardrums.

■ 96. COTTON PADS.—For removal of liquid vesicant agents and for application of gas decontaminating solutions.

■ 97. DICHLORAMINE-T IN TRIACETIN.—For liquid mustard on skin. Blot skin dry. Dab cotton pad, dampened with solution, repeatedly on contaminated area. *Caution: Do not use in eyes.*

■ 98. DRESSINGS.—See paragraph 88.

■ 99. EYE AND NOSE DROPS.—For relief of pain and congestion in eyes and nose. Use one or two drops in eye or two drops in nostril. Apply as often as needed.

■ 100. EYE DRESSING SET (2-INCH EYE PADS; DOUBLE-STRIP ADHESIVE PLASTER PACKETS; BORIC-ACID OINTMENT; BUTYN SULFATE AND METAPHEN OPHTHALMIC OINTMENT).—For eye discomfort caused by exposure to wind or due to dust getting into eyes, squeeze a small amount of boric acid ointment onto the inner surface of the lower lid. If there is severe eye pain due to a foreign body which is not easily removed, apply a small amount of butyn sulfate and metaphen ophthalmic

ointment onto the inner surface of the lower lid and cover the eye with an eye pad held in place by strips of adhesive. *Caution: Do not rub the eye.*

■ 101. EYE SOLUTION M–1.—For lewisite in eyes. Open eye, using gentle force if necessary. Drop two to four drops into eye. Apply a little solution to eyelids. *Caution: Apply only once.*

■ 102. FOILLE.—For burns or frostbite. Spread evenly over injured surface or onto dressings which are to be applied to these surfaces. Since in cold climates the temperature of Foille may become extremely low without the ointment solidifying, care must be taken before it is applied to be sure that the ointment is warmed to near body temperature, otherwise it may cause further harm to the burned or frostbitten part of the body.

■ 103. FOOT POWDER.—For protection of the feet, and for athlete's foot. Wash the feet; dry thoroughly; apply foot powder, especially to soles of feet and between toes.

■ 104. FORCEPS.—For removing gravel, splinters, and other foreign bodies from wounds.

■ 105. HALAZONE.—See paragraph 127.

■ 106. HYDROGEN PEROXIDE SOLUTION (8%).—For liquid lewisite on skin. Blot skin dry. Dab cotton pad dampened with solution repeatedly on contaminated area. *Caution: Do not use in eyes.*

■ 107. INSECT REPELLENT.—For keeping away insects. Turn bottle upside down and spread a small amount of the liquid over exposed skin surfaces.

■ 108. IODINE APPLICATOR.—For application to small scratches.

■ 109. IODINE SWABS.—For sterilization of the skin around a wound. Remove cap from applicator; crush where marked "Crush here." Apply to edges of wound and surrounding skin. Do not apply to wound itself.

■ 110. MORPHINE TARTRATE SYRETTE (½-GRAIN).—For the relief of severe pain. Remove transparent head of morphine syrette. Grasp wire loop and push wire in to pierce inner seal, turning if necessary. Take care not to touch needle with

FIGURE 96.—Morphine syrette.

FIGURE 97.—Method of injecting morphine.

fingers or any other object. Pull out and discard wire, thrust needle through skin at least half its length, and inject solution by slowly squeezing syrette from the sealed end as shown in figure 97. That part of the body which can be most quickly and easily exposed, such as the loose skin of the abdomen, the thigh, or the upper arm, should be used for the place of injection. *Caution: The full effects of morphine are not felt for 20 to 30 minutes after injection. A second injection for continued severe pain should not be given sooner than 2 hours after the first. Never give a second dose of morphine to a person who is breathing 12 or less times a minute. Never give morphine to an unconscious person.*

■ 111. PLASTER, ADHESIVE (1 INCH BY 5 YARDS).—For holding on dressings.

■ 112. PONTOCAINE COMPOUND OINTMENT.—For relief of itching or pain caused by vesicant agents (war gases). Apply to burned skin and gently rub in.

■ 113. PROTECTIVE OINTMENT M–4.—For liquid vesicants (war gases) on skin. Blot skin dry. Apply ointment with cotton pad and rub in for 20 seconds; remove ointment; repeat application, rubbing in and then removing ointment, three or four times.

■ 114. SAFETYPINS.—For fastening dressings and slings.

■ 115. SALT TABLETS (10-GRAIN).—For prevention of heat cramps and heat exhaustion. Also to be added to drinking water if suffering with diarrhea or dysentery. Add two tablets to each canteenful of drinking water, if sweating a great deal, or if having diarrhea or dysentery.

■ 116. SCISSORS.—For cutting bandages, removing clothes from wounds, and other emergency needs.

■ 117. SILVER PROTEIN, MILD, TABLETS (4/10-GRAIN).—For inflammation of the eye. Dissolve one tablet in a large spoonfull of water. Pour solution in the eye every 3 hours.

■ 118. SODIUM BICARBONATE AND PEPPERMINT TABLETS.—For upset stomach or indigestion. Take two tablets every 30 minutes, for not more than three doses.

■ 119. SOLUTION FOR ATHLETE'S FOOT (FRAZIER'S SOLUTION).—For athlete's foot. Turn bottle upside down and apply a small amount by rubbing open end on the affected surface. *Caution: Do not use oftener than twice a day.*

■ 120. SUCTION KIT.—For first aid for snake or poison insect bites, and for wounds caused by poison arrows or other missiles.

a. Apply tourniquet between body and bite. Apply above knee in foot and lower leg bites; above elbow in hand and forearm bites. Loosen tourniquet every 20 minutes for 10 or 15 seconds.

b. Apply iodine to area of bite and to blade for making incision.

c. Make cross incisions ¼ inch long and ¼ inch deep through each fang mark.

d. Apply suction to wound, using small size cup for fingers and toes and larger size cup for other areas. Keep up suction for at least three 20-minute periods. If there is a great amount of bleeding from the incision, tighten tourniquet further, or place a gauze compress on the wound and press the thumb or fingers firmly over the incisions.

e. After suction has been completed, remove tourniquet, sprinkle sulfanilamide into incisions, and apply a sterile dressing.

■ 121: SULFADIAZINE TABLETS (0.5-GRAM).—For prevention of infection in wounds. Take eight tablets by mouth, followed by a large amount of water. If sweating has been great or if large amounts of water cannot be taken both with the drug and for 24 hours afterwards, do not take any of these tablets.

■ 122. SULFAGUANIDINE TABLETS (0.5-GRAM).—For bloody diarrhea. Take four tablets every four hours day and night, until bowel movements are normal. If no improvement in 4 days, take no more tablets.

■ 123. SULFANILAMIDE (5 GRAMS) IN STERILE INDIVIDUAL DOUBLE WRAPPED ENVELOPE WITH SHAKER TOP.—For prevention of infection in wounds. Sprinkle contents of one shaker-top envelope into the wound.

■ 124. SULFANILAMIDE TABLETS (0.5-GRAM).—For prevention of infection in wounds. Take 12 tablets by mouth, followed by a large amount of water. If sweating has been great or if large amounts of water cannot be taken both with the drug and for 24 hours afterwards, do not take any of these tablets.

■ 125. TOURNIQUET.—For stopping bleeding and for snake bite.

■ 126. VITAMINS (MULTIVITAMIN CAPSULES OR TABLETS).—To be taken when on very limited rations. Take two capsules or tablets each day.

■ 127. WATER PURIFICATION (HALAZONE) TABLETS.—For purification of drinking water. Use according to direction on the container.

	Paragraph	Page
Abdomen, pain in	44	49
Abdominal wounds	13*b*	13
Acid, acetylsalicylic	76–78, 86	94, 105
Adhesive compress	72, 73, 75–78, 88*c*	90, 92, 94, 105
Adhesive plaster	77, 78, 111	96, 97, 109
Aircraft casualties	63	61
Airplane casualties	63	61
Aloin compound tablets	76, 78, 82	94, 97, 104
Ammonia, aromatic, inhalant	72, 73, 83	90, 92, 94, 104
Ammoniated mercury ointment	78, 84	97, 104
Amyl nitrite	79, 85	100, 105
Animal bites	34	37
Ankle, fracture of	24	25
Application of compress bandage	8*a*, 11*d*	3, 9
Application of splints	12, 17	13, 14
Arm, fracture of	20–22	22
Arterial hemorrhage (bleeding)	8	3
Artificial respiration	37	44
Asphyxiation	36, 39, 57	41, 47, 59
Aspirin	76–78, 86	94, 105
Atabrine	59*b*, 76, 77, 80, 87	60, 94, 96, 103, 105
Athlete's foot	46	49
Back, fracture of	27	27
Bandaging	8*a*, 11	3
Benzedrine	80, 89	103, 105
Bismuth subcarbonate	78, 90	97
Bites:		
Animal	34	37
Insect	30, 31	36
Snake	29, 120	30, 110
Bleeding:		
Arterial	8	3
Venous	8	3
Blindness, snow	56	57
Blisters	46	49
Boric acid ointment	72, 73, 75, 78, 80, 91, 98	90, 92, 94, 97, 103, 106
Burn injury set	72, 73, 75, 78, 92	90, 92, 94, 97, 106
Burn ointment	72, 73, 75, 80	90, 92, 94, 103
Burns	50, 69, 91	50, 85, 106
Chemical	50*b*, 69, 94, 97, 106, 112, 113	51, 85, 106, 107, 109
Butyn and metaphen ointment	36*a* (3), 56*c*, 72, 73, 75	41, 58, 90, 92, 94

	Paragraph	Page
Carbonmonoxide poisoning	39, 57	47, 59
Care of feet	46, 58	49, 60
Chafing	47	49
Chemical burns	50*b*, 69, 94, 97, 106, 112, 113	51, 85, 106, 107, 109
Chest wounds	13*a*	13
Chills and fever	59	60
Collarbone, fracture of	23	25
Combat injuries	5	2
Compound fracture	14, 19	13, 22
Compress, adhesive	72, 73, 75–78, 88*e*	90, 92, 94, 105
Compress bandage	8*a*, 11, 93	3, 8, 106
Control of hemorrhage (bleeding)	8	3
Convulsions	42	48
Copper sulfate solution	79, 94	100, 106
Cotton absorbent	78, 95	97, 106
Cotton pads	79, 96	100, 106
Cramps, heat	51*c*	52
Crotch, care of	47	49
Definition of first aid	2	1
Diarrhea	60	61
Dichloramine-T in triacetin	79, 97	100, 106
Disinfecting water	45, 73, 75, 76, 78, 80, 85	49, 92, 94, 97, 103, 105
Dislocations	28, 29	30
Dressings	8*a*, 11, 88, 98, 100	3, 8, 105, 106
Drowning	37	44
Drugs	70–127	87
Dysentery	60	61
Ear injuries	36	41
Elbow, fracture of	21	22
Electrical shock	38	47
Electrocution	38	47
Equipment for first aid	3, 70–127	1, 87
Exhaustion, heat	51*b*	52
Eye and nose drops	79, 99	100, 106
Eye dressing	36, 72, 73, 75, 100	41, 90, 92, 94, 106
Eye injuries	36, 52	41, 53
Eye solution M–1	79, 101	100, 107
Face, wounds of	13*c*	13
Fainting	40	48
Feet, care of	46, 58	49, 60
First aid:		
Definition of	2	1
In combat	5	2
Kits	70–80	87
Packets	8*a*, *b*, 11*d*, 71	3, 4, 9, 87
Rules for	4	1
Shock	9	7
Supplies and equipment	3, 70–127	1, 87

	Paragraph	Page
Fits	42	48
Foille	78, 102	97
Foot powder	46, 47, 77, 103	49, 96, 107
Forceps	72, 104	90, 107
Foreign bodies, removal of	36	41
Fractures:		
Back	27	27
Compound	14, 19	13, 22
First aid for	16	14
Neck	27	27
Signs and symptoms	15	14
Simple	14	13
Spine	27	27
Splinting:		
Ankle	24	25
Arm	20, 21, 22	22, 23
Collar bone	23	25
Elbow	21	22
Hip	25	25
Jaw	26	27
Knee	24	25
Leg	24	25
Thigh	25	25
Transportation of	24–27, 65–67	25, 65
With wounds	19	22
Freezing	54	53
Frost bite	54	53
Gangrene	8*c*	4
Gases:		
Peacetime, poisonous	39, 57	47, 59
War	68, 69	85
Gunshot wounds	7	2
Halazone	45, 73, 75, 76, 77, 78, 80, 105	49, 92, 94, 96, 97, 103, 107
Head injuries	13*c*, 43	13, 48
Health measures:		
General	4, 29–48	1, 30
In the Arctic	53–58	53
In the desert	49–52	50
In the jungle and Tropics	59–62	60
In Chemical Warfare	69*d*, *e*, *f*	86, 87
Heat cramps	51*c*	52
Heat exhaustion	51*b*	52
Heatstroke	51*a*	52
Hemorrhage:		
Arterial	8	3
Control of	8	3
Venous	8	3
Hip, fracture of	25	25
Hydrogen peroxide solution	79, 106	100, 107
Immersion foot	58	60
Indigestion	76, 78, 118	94, 97, 109

	Paragraph	Page
Infection	11	8
Injured:		
Removal from tanks and aircraft	63, 64	61, 64
Transportation of	65-67	65
Injuries:		
In aircraft	63	61
In combat	5	2
In tanks	64	64
To head	13, 43	13, 48
Insect bites and stings	30, 31	36
Insect repellent	30, 76, 77, 107	36, 94, 96, 107
Insecticide powder	31	36
Iodine applicator	77, 108	96, 107
Iodine swabs	29, 72, 73, 75, 76, 78, 80, 109	30, 90, 92, 94, 97, 103, 107
Jaw, fracture of	26	27
Jaw, wounds of	13	13
Kits, first aid:		
Aeronautic	75	94
Arctic	78	97
Frying pan	80	103
Gas casualty	79	100
Individual	71	87
Jungle kit (individual)	77	96
Jungle kit (large)	76	94
Motor vehicle (12 unit)	72	90
Motor vehicle (24 unit)	73	92
Packet, first aid	71	87
Parachute	74	94
Snake-bite	29, 120	30, 110
Suction	29, 120	30, 110
Knee, fracture of	24	25
Leeches	33	37
Leg, fracture of	24	25
Lewisite	69b(2)	85
Litters, transportation with	67	81
Lung irritants	69	85
Malaria	59	60
Mercuric ointment, ammoniated	78, 84	97, 104
Methods of removing casualties:		
From airplanes	63c	63
From tanks	64	64
With litters	67	81
Without litters	66	65
Method of water purification	45	49
Morphine tartrate	10, 63c(2), 64, 74-76, 78, 110	8, 63, 64, 94, 97, 107
Mouth, wounds of	13c	13
Mustard gas	69b(2)	85
Neck, fracture of	27	27
Nosebleed	48c	50

	Paragraph	Page
Ointments	72, 73, 75, 78, 84, 91, 100, 102, 113	90, 92, 94, 97, 104, 106, 107, 109
Oxygen	63*a*	62
Packet, first-aid	8, 11*d*, 71	3, 9, 87
Pain:		
Control of	10	8
In abdomen	44	49
Pins, safety	11, 18, 72, 73	8, 15, 90, 92
Plaster, adhesive	77, 78	96, 97
Poison ivy and oak	35	38
Poisoned wounds	29, 48*a*	30, 49
Poisonous gases	39, 57, 68, 69	47, 59, 85
Poisonous plants and fruits	35, 48*b*	38, 49
Poisonous snakes	29	30
Poisons	48	49
Pontocaine compound ointment	79, 112	100, 109
Pressure bandage	8*a*	3
Protective ointment M–4	68, 69*a*, *b*, 71*c*, 113	85, 90, 109
Purification of water	45, 73, 75, 76, 78, 80, 105	49, 92, 94, 97, 103, 107
Rations, limited	126	111
Removal of casualties:		
From airplanes	63*c*	63
From tanks	64	64
With litters	67	81
Without litters	66	65
Removal of foreign bodies	36	41
Respiration, artificial	37	44
Rules for first aid	4	1
Safetypins	11, 18, 72, 73	8, 15, 90, 92
Salt	50, 61	50, 61
Salt tablets	50*a*, 51*a*, *b*(2), 61, 76–78, 80, 115	50, 52, 61, 94, 103, 109
Scissors	72, 73, 75, 116	90, 92, 94, 109
Shelter foot	58	60
Shock:		
Electrical	38	47
Prevention and first aid	9	7
Signs and symptoms	9	7
Signs and symptoms:		
Of fractures	12	13
Of shock	9	7
Silver protein, mild	78, 117	97, 109
Slings	18	15
Snake bite	29, 120	30, 110
Snake-bite kit	29, 120	30, 110
Snow blindness	56	57
Sodium bicarbonate and peppermint tablets	76, 78, 118	94, 97, 109

	Paragraph	Page
Solution for athlete's foot	77, 119	96, 110
Splinting	12, 20–27	13, 22
Splints	12, 17	13, 14
Sprains	28	30
Sterilization of water	45, 73, 75, 76, 78, 80, 105	49, 92, 94, 97, 103, 107
Stings	30–32	36
Strains	28	30
Suction kit	29, 120	30, 110
Sulfadiazine burn ointment	72, 73, 75	90, 92, 94
Sulfonamide drugs	11, 19, 29, 50, 54c, 60, 61, 71–73, 75–78, 80, 121–124	8, 22, 30, 50, 56, 61, 87, 94, 103, 110
Sunburn	50	50
Sunstroke	51a	52
Supplies, first aid	3, 70–127	1, 87
Swelling	15, 17, 21, 28	14, 22, 30
Syrettes, morphine	10, 110	8, 107
Tank casualties	64	64
Tear gas	69d	86
Thigh, fracture of	25	25
Throat, wounds of	9	7
Tourniquet	8c, 55, 72–75, 125	4, 57, 90, 111
Transportation of casualties:		
With back injuries	27	27
With face, jaw, and mouth injuries	13	13
With litters	67	81
With neck injuries	27	27
Without litters	66	65
With spine injuries	27	27
Trench foot	53	60
Triangular bandage	72, 73, 88	90, 92, 105
Unconsciousness	41	48
Venous hemorrhage (bleeding)	8	3
Vesicant agents	69b	85
Vitamins	126	111
War gases	68, 69	85
Water purification	45, 73, 75, 76, 78, 80, 105	49, 92, 94, 97, 103, 107
Water purification tablets	45, 73, 75, 76, 78, 80, 105	49, 92, 94, 97, 103, 107
Water requirements	51, 61	51, 61
Windburn	52	53
Wounded:		
Methods of removing from tanks and airplanes	63c, 64	63, 64
Method of transporting	65–67	65
Wound dressings	8d, 98	105, 106

	Paragraph	Page
Wounds:		
Abdomen	13	13
Chest	13	13
Exposure of	7	2
Face	13	13
Gunshot	7	2
Head	13, 43	13, 48
In cold climates	55	57
Infected	11	8
Jaw	13	13
Mouth	13	13
Poisoned	29, 48	30, 49
Throat	9	7
With fractures	19	22